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Memorandum

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CC R. Wodrich - AECOM
Subject Inspection Results and Recommendations for Sediment Pond

From Bob Budzilek
Date December 14, 2011

AECOM is pleased to provide this technical memorandum with the results of the investigation of the sediment pond at the Charter Steel – Cleveland facility.

Purpose of Evaluation

The purpose of this evaluation is to evaluate the current conditions of the storm water pond serving the Charter Steel facility in Cleveland, Ohio, and to determine if there are any actions that might be taken to improve the functioning of the pond.

The pond currently provides storm water detention for a large portion of the plant. The pond allows for sediment to settle out of the storm water flow. The pond also acts as secondary containment in case of an oil release to the storm water collection system at the plant.

Flow enters in the northwest end of the pond, and is manually discharged at the southeast end of the pond at the outfall structure. Discharge quality and quantity are both recorded at the outfall structure during the discharge. The level of the pond can be drained approximately 1 foot from the top of the outfall dam wall through the outfall discharge pipe.

There are two oil containment booms (SlickBar) at either end of the pond. Oil recovery systems used to operate to collect accumulated oil back when the pond was used as a process water pond. The oil recovery systems are inoperable have not operated in several years.

Chain of Custody Record



SERVICES Severn Trent Laboratories, Inc.

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Chain o Custody Record



SERVICES Severn Trent Laboratories, Inc.

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SAMPLE DUPLICATE EVALUATION REPORT

General Chemistry

Client Lot #...: A2A240105 Work Order #...: ER6RH-SMP Matrix.....: SOLID

ER6RH-DUP

Date Sampled...: 01/23/02 13:35 Date Received..: 01/24/02

% Moisture....: 25

DUPLICATE RPD PREPARATION-PREP LIMIT PARAM RESULT RESULT UNITS RPD METHOD ANALYSIS DATE BATCH # Percent Solids SD Lot-Sample #: A2A240240-005 74.7 (0-20) MCAWW 160.3 MOD 75.5 P6 1.1 01/25-01/28/02 2025176

Dilution Factor: 1

SAMPLE DUPLICATE EVALUATION REPORT

General Chemistry

Client Lot #...: A2A240105 Work Order #...: ER6Q2-SMP Matrix.....: SOLID

ER6Q2-DUP

Date Sampled...: 01/23/02 13:00 Date Received..: 01/24/02

% Moisture....: 23

	DUPLICATE			RPD		PREPARATION-	PREP
PARAM RESULT	RESULT	UNITS	RPD	LIMIT	METHOD	ANALYSIS DATE	BATCH #
Percent Solids					SD Lot-Sample #:	A2A240240-001	
76.7	76.7	િ	0.051	(0-20)	MCAWW 160.3 MOD	01/25-01/28/02	2025176

Dilution Factor: 1

SAMPLE DUPLICATE EVALUATION REPORT

General Chemistry

Client Lot #:				ER	5J4-DUP	iж: WG	
Date Sampled:	01/23/02 1						
% Moisture:		Dilut	ion Fa	ctor:	Initi	al Wgt/Vol:	
	DUPLICATE			RPD		PREPARATION-	PREP
PARAM RESULT	RESULT	UNITS	RPD	LIMIT	METHOD	ANALYSIS DATE	BATCH #
pH (liquid)					SD Lot-Sample #:	A2A240105-011	
7.4	7.4	No Units	0.028	(0-20)	MCAWW 150.1	01/24/02	2024478
		Dilution Fact	or: 1				
Acidity					SD Lot-Sample #:	A2A240105-011	
ND	ND	mg/L	0	(0-10)	MCAWW 305.1	01/25/02	2029212
		Dilution Fact	or: 1				
Specific Conducta	ance				SD Lot-Sample #:	A2A240105-011	
220	230	umhos/cm	1.3	(0-20)	MCAWW 120.1	01/24/02	2024410
		Dilution Fact	or: 1				

General Chemistry

Client Lot #...: A2A240105 Matrix....: WATER

Date Sampled...: 01/15/02 10:15 Date Received..: 01/16/02

	PERCENT	RECOVERY		RPD		PREPARATION-	PREP
PARAMETER	RECOVERY	LIMITS	RPD	LIMITS	METHOD	ANALYSIS DATE	BATCH #
Cyanide, Tota	al	WO# :	ERQM	K1H6-MS/	ERQMX1H7-MSD	MS Lot-Sample #: A2	A160210-001
	97	(40 - 130)			MCAWW 335.2	01/28/02	2028173
	92	(40 - 130)	5.5	(0-99)	MCAWW 335.2	01/28/02	2028173
		Dilut	ion Fac	tor 1			

NOTE(S):

TOTAL Metals

Client Lot #...: A2A240105 Matrix.....: WATER

Date Sampled...: 01/22/02 09:00 Date Received..: 01/24/02

	PERCENT	RECOVERY	RPD		PREPARATION-	WORK
PARAMETER	RECOVERY	LIMITS RPD	LIMITS	METHOD	ANALYSIS DATE	ORDER #
Mercury	97	(53 - 135)		SW846 7470A	01/25-01/28/02	ER6CW1DL
	93	(53 - 135) 4.1	(0-20)	SW846 7470A	01/25-01/28/02	ER6CWlDM

Dilution Factor: 1

NOTE(S):

TOTAL Metals

Client Lot #...: A2A240105 Matrix..... WATER

Date Sampled...: 01/22/02 09:00 Date Received..: 01/24/02

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רו פורות וווא אי רג אי רג	PERCENT	RECOVERY RPD	MEGLIOD	PREPARATION- WORK	TT.
PARAMETER	RECOVERY	LIMITS RPD LIMITS	METHOD	ANALYSIS DATE ORDER	<u>#</u>
BEC Tob Comp?	- 44 - 707024	0197-001 Prep Batch #	000 5114		
-	.e #: A2A24 101	-		01/25-01/28/02 ER6CW1	mrv=
Copper	102	(75 - 125) (75 - 125) 0.97 (0-20)	SW846 6010B SW846 6010B	01/25-01/28/02 ER6CW1	
	102	Dilution Factor: 1	AV1109 040WA	01/25-01/28/02 BR6CWI	20
Nickel	100	(75 - 125)	SW846 6010B	01/25-01/28/02 ER6CW10	27
	101	(75 - 125) 1.2 (0-20)	SW846 6010B	01/25-01/28/02 ER6CW1	38
		Dilution Factor: 1			
Zinc	104	(75 - 125)	SW846 6010B	01/25-01/28/02 ER6CW1	
	104	(75 - 125) 0.71 (0-20)	SW846 6010B	01/25-01/28/02 ER6CW11	ЭK
		Dilution Factor: 1			
Arsenic	99	(75 - 125)	SW846 6010B	01/25-01/28/02 ER6CW12	A 5
	101	(75 - 125) 1.2 (0-20)	SW846 6010B	01/25-01/28/02 ER6CW12	
		Dilution Factor: 1			
jium	99	(75 - 125)	SW846 6010B	01/25-01/28/02 ER6CW10	
	99	(75 - 125) 0.82 (0-20)	SW846 6010B	01/25-01/28/02 ER6CW10	ľK
		Dilution Factor: 1			
Cadmium	99	(75 - 125)	SW846 6010B	01/25-01/28/02 ER6CW10	ZN
	100	(75 - 125) 1.1 (0-20)	SW846 6010B	01/25-01/28/02 ER6CW10	
		Dilution Factor: 1		. , ,	
Lead	100	(75 - 125)	SW846 6010B	01/25-01/28/02 ER6CW1A	
	101	(75 - 125) 1.2 (0-20)	SW846 6010B	01/25~01/28/02 ER6CW1F	18
		Dilution Factor: 1			
Chromium	99	(75 - 125)	SW846 6010B	01/25-01/28/02 ER6CW10	T
	100	(75 - 125) 1.1 (0-20)	SW846 6010B	01/25-01/28/02 ER6CW10	U.
		Dilution Factor: 1			
Selenium	103	(75 - 125)	SW846 6010B	01/25-01/28/02 ER6CW1F	19
	104	(75 ~ 125) 0.93 (0-20)	SW846 6010B	01/25-01/28/02 ER6CW10	Α
		Dilution Factor: 1			
Silver	109	(75 - 125)	SW846 6010B	01/25-01/28/02 ER6CW1D	C
	112	(75 - 125) 2.1 (0-20)	SW846 6010B	01/25-01/28/02 ER6CWID	
		Dilution Factor: 1			

(Continued on next page)

GC/MS Volatiles

Client Lot #...: A2A240105 Work Order #...: ERT6H1AD-MS Matrix..... WATER

MS Lot-Sample #: A2A170243-006 ERT6H1AE-MSD

Date Sampled...: 01/14/02 15:55 Date Received..: 01/17/02 Prep Date....: 01/25/02 Analysis Date..: 01/25/02

Prep Batch #...: 2028132 Dilution Factor: 333.33

	PERCENT	RECOVERY		RPD		
PARAMETER	RECOVERY	LIMITS	RPD	LIMITS	METHOI)
1,1-Dichloroethene	101	(62 - 130)			SW846	8260B
	103	(62 - 130)	2.2	(0-20)	SW846	8260B
Trichloroethene	98	(62 ~ 130)			SW846	8260B
	102	(62 - 130)	4.2	(0-20)	SW846	8260B
Benzene	92	(78 - 118)			SW846	8260B
	108	(78 - 118)	3.7	(0-20)	SW846	8260B
Toluene	88	(70 - 119)			SW846	8260B
	90	(70 - 119)	1.9	(0-20)	SW846	8260B
Chlorobenzene	108	(76 - 117)			SW846	8260B
	106	(76 - 117)	1.7	(0-20)	SW846	8260B
		PERCENT		RECOVERY		
ROGATE		RECOVERY		LIMITS	-	
Dibromofluoromethane		98		(73 ~ 122)	
		94		(73 - 122)	
1,2-Dichloroethane-d4		91		(61 - 128)	
		96		(61 - 128)	
Toluene-d8		86		(76 - 110)	
		87		(76 - 110)	
4-Bromofluorobenzene		116		(74 - 116)	
		118 *		(74 - 116)	

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

^{*} Surrogate recovery is outside stated control limits.

General Chemistry

Client Lot #: A2A240105	Matrix WATER

PARAMETER ph (liquid)	PERCENT RECOVERY 99	RECOVERY LIMITS METHOD Work Order #: ER7E81AA LCS (97 - 103) MCAWW 150.1 Dilution Factor: 1	PREPARATION- PREP <u>ANALYSIS DATE</u> <u>BATCH #</u> Lot-Sample#: A2A240000-478 01/24/02 2024478
Cyanide, Total	96	Work Order #: ETACE1AC LCS (65 - 114) MCAWW 335.2 Dilution Factor: 1	Lot-Sample#: A2A280000-173 01/28/02 2028173
Specific Conduc	tance 102	Work Order #: ER6441AC LCS (75 - 125) MCAWW 120.1 Dilution Factor: 1	Lot-Sample#: A2A240000-410 01/24/02 2024410

NOTE(S):

TOTAL Metals

Client Lot #:	: A2A240105		Matrix: WATER
PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS METHOD	PREPARATION- ANALYSIS DATE WORK ORDER #
LCS Lot-Sample#: Copper	: A2A250000- 99	-114 Prep Batch #: 2025114 (80 - 120) SW846 6010B Dilution Factor: 1	
Nickel	99	(80 ~ 120) SW846 6010B Dilution Factor: 1	01/25-01/28/02 ER7GD1CL
Zinc	104	(80 - 120) SW846 6010B Dilution Factor: 1	01/25-01/28/02 ER7GD1CR
Arsenic	99	(80 - 120) SW846 6010B Dilution Factor: 1	01/25-01/28/02 ER7GD1A3
Barium	97	(80 - 120) SW846 6010B Dilution Factor: 1	01/25-01/28/02 ER7GD1A9
μ́d	100	(80 - 120) SW846 6010B Dilution Factor: 1	01/25-01/28/02 ER7GD1A4
Cadmium	100	(80 - 120) SW846 6010B Dilution Factor: 1	01/25-01/28/02 ER7GD1CC
Selenium	103	(80 - 120) SW846 6010B Dilution Factor: 1	01/25-01/28/02 ER7GD1A5
Chromium	99	(80 - 120) SW846 6010B Dilution Factor: 1	01/25-01/28/02 ER7GD1CE
Silver	109	(80 - 120) SW846 6010B Dilution Factor: 1	01/25-01/28/02 ER7GD1CN
Mercury	93	(70 - 118) SW846 7470A Dilution Factor: 1	01/25-01/28/02 ER7GD1CT
NOTE(S):			

GC Semivolatiles

Client Lot #...: A2A240105 Work Order #...: ER5J91AC-LCS Matrix.....: SOLID

LCS Lot-Sample#: A2A240000-151 ER5J91AD-LCSD

Prep Date....: 01/24/02 Analysis Date..: 01/27/02

Prep Batch #...: 2024151

Dilution Factor: 1

	PERCENT	RECOVERY	RPD	
PARAMETER	RECOVERY	LIMITS	RPD LIMITS	METHOD
Aroclor 1016	90	(49 - 122)		SW846 8082
	75	(49 - 122)	18 (0-39)	SW846 8082
Aroclor 1260	99	(51 - 127)		SW846 8082
	81	(51 - 127)	20 (0-33)	SW846 8082
		PERCENT	RECOVERY	
SURROGATE		RECOVERY	LIMITS	
Tetrachloro-m-xylene		89	(31 - 127)	
-		72	(31 - 127)	
Decachlorobiphenyl		105	(23 - 141)	
		83	(23 - 141)	

NOTE(S):

iculations are performed before rounding to avoid round-off errors in calculated results.

GC Semivolatiles

Client Lot #...: A2A240105 Work Order #...: ER5KM1AC-LCS Matrix.....: SOLID

LCS Lot-Sample#: A2A240000-152 ER5KM1AD-LCSD

Prep Date....: 01/24/02 Analysis Date..: 01/26/02

Prep Batch #...: 2024152

Dilution Factor: 1

PARAMETER Total Petroleum Hydrocarbons-Extractable	PERCENT RECOVERY 80	RECOVERY LIMITS (37 - 153)	RPD	RPD LIMITS	METHOD SW846 8015B
*	83	(37 - 153)	3.8	(0-98)	SW846 8015B
		PERCENT	RECOV	ERY	
SURROGATE		RECOVERY	LIMIT	S	

		T THE CHIEF T	MACONDATE
	RROGATE	RECOVERY	LIMITS
C9	(nonane)	37	(10 - 110)
		34	(10 - 110)

NOTE (S)

Calculations are performed before rounding to avoid round-off errors in calculated results.

GC Volatiles

Client Lot #...: A2A240105 Work Order #...: ER7VM1AC-LCS Matrix..... SOLID

LCS Lot-Sample#: A2A250000-197 ER7VM1AD-LCSD

Prep Date....: 01/24/02 Analysis Date..: 01/24/02

Prep Batch #...: 2025197

Dilution Factor: 1

	PERCENT	RECOVERY	RPD	
PARAMETER	RECOVERY	LIMITS	RPD LIMITS	METHOD
TPH (as Gasoline)	85	(74 - 133)		SW846 8015 MOD
	94	(74 - 133)	11 (0-23)	SW846 8015 MOD
		PERCENT	RECOVERY	
SURROGATE		RECOVERY	LIMITS	
Trifluorotoluene		49	(10 - 150)	
		51	(10 - 150)	

NOTE (S) -

Calculations are performed before rounding to avoid round-off errors in calculated results.

GC/MS Volatiles

Client Lot #...: A2A240105 Work Order #...: ER99R1AC-LCS Matrix.... WATER

LCS Lot-Sample#: A2A280000-132 ER99R1AD-LCSD Analysis Date..: 01/25/02

Prep Date....: 01/25/02

Prep Batch #...: 2028132 Dilution Factor: 1

	PERCENT	RECOVERY	RPD	
FARAMETER	RECOVERY	LIMITS RP	LIMITS	METHOD
1,1-Dichloroethene	102	(63 ~ 130)		SW846 8260B
	106	(63 - 130) 4.	0 (0-20)	SW846 8260B
Trichloroethene	100	(75 - 122)		SW846 8260B
	103	(75 - 122) 3.	0 (0-20)	SW846 8260B
Вепzепе	107	(80 - 116)		SW846 8260B
	108	(80 - 116) 0.	79 (0-20)	SW846 8260B
Toluene	91	(74 - 119)		SW846 8260B
	93	(74 - 119) 2.	4 (0-20)	SW846 8260B
Chlorobenzene	106	(76 - 117)		SW846 8260B
	109	(76 - 117) 2.	7 (0-20)	SW846 8260B

	PERCENT	RECOVERY		
SURROGATE	RECOVERY	LIMITS		
ibromofluoromethane	97	(73 ~ 122)		
,	97	(73 - 122)		
1,2-Dichloroethane-d4	94	(61 ~ 128)		
	92	(61 - 128)		
Toluene-d8	87	(76 - 110)		
	88	(76 - 110)		
4-Bromofluorobenzene	109	(74 - 116)		
	111	(74 - 116)		

Calculations are performed before rounding to avoid round-off errors in calculated results.

GC/MS Volatiles

Client Lot #...: A2A240105 Work Order #...: ER7HM1AC-LCS Matrix.....: SOLID

LCS Lot-Sample#: A2A250000-140 ER7HM1AD-LCSD

Prep Date....: 01/24/02 Analysis Date..: 01/24/02

Prep. Batch #...: 2025140

Dilution Factor: 1

	PERCENT	RECOVERY		RPD	
PARAMETER	RECOVERY	LIMITS	RPD	LIMITS	METHOD
1,1-Dichloroethene	109	(55 - 142)			SW846 8260B
	104	(55 - 142)	5.0	(0-27)	SW846 8260B
Trichloroethene	109	(70 - 131)			SW846 8260B
	106	(70 - 131)	2.8	(0-23)	SW846 8260B
Chlorobenzene	104	(75 - 127)			SW846 8260B
	100	(75 - 127)	3.9	(0-22)	SW846 8260B
Toluene	104	(71 - 130)			SW846 8260B
•	101	(71 - 130)	3.3	(0-24)	SW846 8260B
Benzene	109	(75 - 129)			SW846 8260B
	107	(75 - 129)	1.8	(0-20)	SW846 8260B
		PERCENT	RECOVI	ERY	
SURROGATE		RECOVERY	LIMITS	3	
abromofluoromethane		90	(59 -	138)	
		88	(59 ~	138)	4
1,2-Dichloroethane-d4		85	(61 -	130)	
		81	(61 -	130)	
Toluene-d8		92	(60 -	143)	
		91	(60 -	143)	
4-Bromofluorobenzene		96	(47 -	158)	

95

(47 - 158)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

General Chemistry

Client Lot #...: A2A240105

Matrix....: SOLID

		REPORTING	e T		PREPARATION-	PREP
PARAMETER	RESULT	LIMIT	UNITS	METHOD	ANALYSIS DATE	BATCH #
Percent Solids		Work Order	#: ETAG51AA	MB Lot-Sample #:	A2A250000-176	
	ND	10.0	્ર	MCAWW 160.3 MOD	01/25-01/28/02	2025176

Dilution Factor: 1

NOTE(S):

General Chemistry

Client Lot #...: A2A240105

Matrix....: WATER

		REPORTIN	G		PREPARATION-	PREP
PARAMETER	RESULT	LIMIT	UNITS	METHOD	ANALYSIS DATE	BATCH #
Acidity		Work Order	#: ETDHX1AA	MB Lot-Sample #:	D2A290000-212	
	ND	10	mg/L	MCAWW 305.1	01/25/02	2029212
		Dilution Fact	or: 1			
Cyanide, Total	ND	Work Order 0.010 Dilution Fact	mg/L	MB Lot-Sample #: MCAWW 335.2	A2A280000-173 01/28/02	2028173
Specific Conductar	ice ND	Work Order 1 Dilution Fact	#: ER6441AA umhos/cm .or: 1	MB Lot-Sample #: MCAWW 120.1	A2A240000-410 01/24/02	2024410

NOTE(S):

TOTAL Metals

Client Lot #...: A2A240105

Matrix....: WATER

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION- WORK ANALYSIS DATE ORDER #
MB Lot-Sample : Copper	#: A2A250000- ND	_	mg/L	2025114 SW846 6010B	01/25-01/28/02 ER7GDlAP
Nickel	ND	0.040 Dilution Facto	_	SW846 6010B	01/25-01/28/02 ER7GD1AU
Zinc	0.040	0.020 Dilution Factor	mg/L or: 1	SW846 6010B	01/25-01/28/02 BR7GDLA1
Arsenic	ND	0.010 Dilution Facto	mg/L or: 1	SW846 6010B	01/25-01/28/02 ER7GD1AA
Barium	ND	0.20 Dilution Facto	mg/L er: 1	SW846 6010B	01/25-01/28/02 ER7GD1AH
Cadmium	ND	0.0050 Dilution Facto	mg/L or: 1	SW846 6010B	01/25-01/28/02 ER7GD1AK
пeag	ND	0.0030 Dilution Facto	mg/L or: 1	SW846 6010B	01/25-01/28/02 ER7GD1AC
Chromium	ND	0.010 Dilution Facto	mg/L or: 1	SW846 6010B	01/25-01/28/02 ER7GD1AM
Selenium	ND	0.0050 Dilution Facto	mg/L or: 1	SW846 6010B	01/25-01/28/02 ER7GD1AD
Silver	ND	0.010 Dilution Facto	mg/L or: 1	SW846 6010B	01/25-01/28/02 ER7GD1AW
Mercury	ND	0.00020 Dilution Facto	mg/L er: 1	SW846 7470A	01/25-01/28/02 ER7GD1A2
NOTE(S):				maga 5000	

GC Semivolatiles

Matrix..... SOLID

Client Lot #...: A2A240105 Work Order #...: ER5J91AA

MB Lot-Sample #: A2A240000-151

Prep Date....: 01/24/02
Analysis Date..: 01/27/02
Prep Batch #...: 2024151

Dilution Factor: 1

		REPORTING		
PARAMETER	RESULT	LIMIT	UNITS	METHOD
Aroclor 1016	ND	33	ug/kg	SW846 8082
Aroclor 1221	ND	33	ug/kg	SW846 8082
Aroclor 1232	ND	33	ug/kg	SW846 8082
Aroclor 1242	ND	33	ug/kg	SW846 8082
Aroclor 1248	ND	33	ug/kg	SW846 8082
Aroclor 1254	ND	33	ug/kg	SW846 8082
Aroclor 1260	ND	33	ug/kg	SW846 8082
	PERCENT	RECOVERY		
SURROGATE	RECOVERY	LIMITS		
Tetrachloro-m-xylene	79	(31 - 127)	
Decachlorobiphenyl	88	(23 ~ 141)	

TE(S):

GC Semivolatiles

Client Lot #...: A2A240105

Work Order #...: ER5KM1AA

Matrix....: SOLID

MB Lot-Sample #: A2A240000-152

Prep Date....: 01/24/02

Analysis Date..: 01/26/02

Prep Batch #...: 2024152

Dilution Factor: 1

REPORTING

PARAMETER

LIMIT

METHOD UNITS

TPH (as Diesel)

10

mg/kg SW846 8015B

SURROGATE

PERCENT RECOVERY RECOVERY LIMITS

C9 (nonane)

36

ND

(10 - 110)

NOTE(S):

GC Volatiles

Client Lot #...: A2A240105

Work Order #...: ER7VM1AA

Matrix..... SOLID

MB Lot-Sample #: A2A250000-197

Prep Date....: 01/24/02

Analysis Date..: 01/24/02

Prep Batch #...: 2025197

Dilution Factor: 1

REPORTING

PARAMETER

LIMIT

UNITS METHOD

METHOD

TPH (as Gasoline)

RESULT ND

100

ug/kg SW846 8015 MOD

PERCENT

U.

RECOVERY

RECOVERY LIMITS

Trifluorotoluene

12

(10 - 150)

NOTE(S):

SURROGATE

GC/MS Volatiles

Client Lot #...: A2A240105 Work Order #...: ER99R1AA Matrix...... WATER

NOTE(S):

GC/MS Volatiles

Client Lot #...: A2A240105

Work Order #...: ER99R1AA

Matrix..... WATER

MB Lot-Sample #: A2A280000-132

Prep Date....: 01/25/02

Analysis Date..: 01/25/02

Prep Batch #...: 2028132

Dilution Factor: 1

4-Bromofluorobenzene

		REPORTING	-			
PARAMETER	RESULT	LIMIT	UNITS	METHOD		
Chloromethane	ND	1.0	ug/L	SW846 8260B		
Bromomethane	ND	1.0	ug/L	SW846 8260B		
Vinyl chloride	ND	1.0	ug/L	SW846 8260B		
Chloroethane	ND	1.0	ug/L	SW846 8260B		
Methylene chloride	ND	1.0	ug/L	SW846 8260B		
Acetone	ND	10	ug/L	SW846 8260B		
Carbon disulfide	ND	1.0	ug/L	SW846 8260B		
1,1-Dichloroethene	ND	1.0	ug/L	SW846 8260B		
1,1-Dichloroethane	ND	1.0	ug/L	SW846 8260B		
trans-1,2-Dichloroethene	ND	0.50	ug/L	SW846 8260B		
cis-1,2-Dichloroethene	ND	0.50	ug/L	SW846 8260B		
Chloroform	ND	1.0	ug/L	SW846 8260B		
1 2-Dichloroethane	MD	1.0	ug/L	SW846 8260B		
utanone	ND	10	ug/L	SW846 8260B		
1,1,1-Trichloroethane	ND	1.0	ug/L	SW846 8260B		
Carbon tetrachloride	ND	1.0	ug/L	SW846 8260B		
Bromodichloromethane	ND	1.0	ug/L	SW846 8260B		
1,2-Dichloropropane	ND	1.0	ug/L	SW846 8260B		
cis-1,3-Dichloropropene	ND	1.0	ug/L	SW846 8260B		
Trichloroethene	ND	1.0	ug/L	SW846 8260B		
Dibromochloromethane	ND	1.0	ug/L	SW846 8260B		
1,1,2-Trichloroethane	ND	1.0	ug/L	SW846 8260B		
Benzene	ND	1.0	ug/L	SW846 8260B		
trans-1,3-Dichloropropene	ND	1.0	ug/L	SW846 8260B		
Bromoform	ND	1.0	ug/L	SW846 8260B		
4-Methyl-2-pentanone	ND	10	ug/L	SW846 8260B		
2-Hexanone	ND	10	ug/L	SW846 8260B		
Tetrachloroethene	ND	1.0	ug/L	SW846 8260B		
1,1,2,2-Tetrachloroethane	ND	1.0	ug/L	SW846 8260B		
Toluene	ND	1.0	ug/L	SW846 8260B		
Chlorobenzene	ND	1.0	ug/L	SW846 8260B		
Ethylbenzene	ND	1.0	ug/L	SW846 8260B		
Styrene	ND	1.0	ug/L	SW846 8260B		
Xylenes (total)	ND	1.0	ug/L	SW846 8260B		
	PERCENT	RECOVERY				
SURROGATE	RECOVERY	LIMITS				
Dibromofluoromethane	101	(73 - 122))			
2-Dichloroethane-d4	97	(61 - 128))			
\dot{M} uene-d8	90	(76 - 110)	}			

(Continued on next page)

(74 - 116)

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GC/MS Volatiles

Client Lot #...: A2A240105 Work Order #...: ER7HM1AA Matrix..... SOLID

MB Lot-Sample #: A2A250000-140

Prep Date....: 01/24/02 Prep Batch #...: 2025140

Analysis Date..: 01/24/02

Dilution Factor: 1

		REPORT I	NG	
PARAMETER	RESULT	LIMIT	UNITS	METHOD
Toluene	ND	5.0	ug/kg	SW846 8260B
Xylenes (total)	ND	10	ug/kg	SW846 8260B
Methyl tert-butyl ether	ND	20	ug/kg	SW846 8260B
Benzene	ND	5.0	ug/kg	SW846 8260B
Ethylbenzene	ND	5.0	ug/kg	SW846 8260B
SURROGATE	PERCENT RECOVERY	RECOVER LIMITS	Y	
Dibromofluoromethane	91	(59 - 13	38)	
1,2-Dichloroethane-d4	87	(61 - 130)		
Toluene-d8	95	(60 - 14	43)	
4-Bromofluorobenzene	99	(47 - 15	58)	

QUALITY CONTROL SECTION

Client Sample ID: TW-03

General Chemistry

Lot-Sample #...: A2A240105-012 Work Order #...: ERSJ8
Date Sampled...: 01/23/02 14:15 Date Received..: 01/24/02 Matrix..... WG .

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION- ANALYSIS DATE	PREP BATCH #
pH (liquid)	7.8	Dilution Facto	No Units	MCAWW 150.1	01/24/02	2024478
Acidity	ND	10 Dilution Facto	mg/L or: l	MCAWW 305.1	01/25/02	2029212
Specific Conductance	2500	1 Dilution Facto	umhos/cm	MCAWW 120.1	01/24/02	2024410
Total Cyanide	ND	0.010 Dilution Facto	mg/L or: 1	MCAWW 335.2	01/28/02	2028173

Client Sample ID: TW-03

TOTAL Metals

Lot-Sample #...: A2A240105-012

Date Sampled...: 01/23/02 14:15 Date Received..: 01/24/02

REPORTING PREPARATION-WORK RESULT LIMIT UNITS METHOD ANALYSIS DATE ORDER # Prep Batch #...: 2025114 0.025 mq/L SW846 6010B 01/25-01/28/02 ER5J81AQ Copper Dilution Factor: 1 0.040 Nickel mq/L SW846 6010B 01/25-01/28/02 ER5J81AR Dilution Factor: 1 Zinc ND 0.020 mq/L SW846 6010B 01/25-01/28/02 ER5J81AT Dilution Factor: 1 Arsenic ND 0.010 mg/L SW846 6010B 01/25-01/28/02 ER5J81AG Dilution Factor: 1 Barium ND 0.20 mq/L SW846 6010B 01/25-01/28/02 ER5J81AC Dilution Factor: 1 lmium ND0.0050 mq/L SW846 6010B 01/25-01/28/02 ER5J81AD Dilution Factor: 1 Lead ND 0.0030 mg/L SW846 6010B 01/25-01/28/02 ER5J81AH Dilution Factor: 1 Chromium ND 0.010 mg/L SW846 6010B 01/25-01/28/02 ER5J81AE Dilution Factor: 1 Selenium ND0.0050 mg/L SW846 6010B 01/25-01/28/02 ER5J81AJ Dilution Factor: 1 Silver 01/25-01/28/02 ER5J81AF ND 0.010 mg/L SW846 6010B Dilution Factor: 1 Mercury ND. 0.00020 mg/L SW846 7470A 01/25-01/28/02 ER5J81AK

Dilution Factor: 1

Matrix....: WG

Client Sample ID: TW-03

GC/MS Volatiles

Lot-Sample #...: A2A240105-012 Work Order #...: ER5J81AA Matrix....: WG

Date Sampled...: 01/23/02 14:15 Date Received..: 01/24/02 Prep Date....: 01/25/02 Analysis Date..: 01/25/02

Prep Batch #...: 2028132

Dilution Factor: 1	Method: SW846 8260B		
		REPORTIN	
PARAMETER	RESULT	LIMIT	UNITS
Chloromethane	ND	1.0	ug/L
Bromomethane	ND	1.0	ug/L
Vinyl chloride	ND	1.0	ug/L
Chloroethane	ND	1.0	ug/L
Methylene chloride	ND	1.0	ug/L
Acetone	ND	10	ug/L
Carbon disulfide	ND	1.0	ug/L
1,1-Dichloroethene	ND	1.0	ug/L
1,1-Dichloroethane	ND	1.0	ug/L
trans-1, 2-Dichloroethene	ND	0.50	ug/L
cis-1,2-Dichloroethene	ND	0.50	ug/L
Chloroform	ND	1.0	ug/L
l,2-Dichloroethane	ND	1.0	ug/L
}Butanone	ND	10	ug/L
1,1,1-Trichloroethane	ND	1.0	ug/L
Carbon tetrachloride	ИD	1.0	ug/L
Bromodichloromethane	ND	1.0	ug/L
1,2-Dichloropropane	ND	1.0	ug/L
cis-1,3-Dichloropropene	ND	1.0	ug/L
Trichloroethene	ND	1.0	ug/L
Dibromochloromethane	ND	1.0	ug/L
1,1,2-Trichloroethane	ND	1.0	ug/L
Benzene	ND	1.0	ug/L
trans-1,3-Dichloropropene	ND	1.0	ug/L
Bromoform	ND	1.0	ug/L
4-Methyl-2-pentanone	ND	10	ug/L
2-Hexanone	ND	10	ug/L
Tetrachloroethene	ND	1.0	ug/L
1,1,2,2-Tetrachloroethane	ND	1.0	ug/L
Toluene	ND	1.0	ug/L
Chlorobenzene	ND	1.0	ug/L
Ethylbenzene	ND	1.0	ug/L
Styrene	ND	1.0	ug/L
Xylenes (total)	ND	1.0	ug/L
		-	· 🕽
	PERCENT	RECOVERY	•
SURROGATE	RECOVERY	LIMITS	9F13P45788
Dibromofluoromethane	99	(73 - 12	
2-Dichloroethane-d4	99	(61 - 12	
√luene-d8	85	(76 - 11	0)

	PERCENT	RECOVERY
SURROGATE	RECOVERY	LIMITS
Dibromofluoromethane	99	(73 - 122)
2-Dichloroethane-d4	99	(61 - 128)
/oluene-d8	85	(76 - 110)
4-Bromofluorobenzene	104	(74 - 116)

Client Sample ID: TW-02

General Chemistry

Lot-Sample #...: A2A240105-011 Work Order #...: ER5J4 Matrix...... WG

Date Sampled...: 01/23/02 13:20 Date Received..: 01/24/02

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION- ANALYSIS DATE	PREP BATCH #
рн (liquid)	7.4	dilution Fact	No Units	MCAWW 150.1	01/24/02	2024478
Acidity	ND r	10 Fact	mg/L or: 1	MCAWW 305.1	01/25/02	2029212
Specific Conductance		l ilution Fact	umhos/cm	MCAWW 120.1	01/24/02	2024410
Total Cyanide	ND	0.010 ilution Fact	mg/L or: 1	MCAWW 335.2	01/28/02	2028173

Client Sample ID: TW-02

TOTAL Metals

Lot-Sample #...: A2A240105-011 Matrix.....: WG

Date Sampled...: 01/23/02 13:20 Date Received..: 01/24/02

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHO:	D	PREPARATION- ANALYSIS DATE	WORK ORDER #
Prep Batch # Copper	: 2025114 ND	0.025	-	SW846	6010B	01/25-01/28/02	ER5J41AT
Nickel	ND	Dilution Facto	mg/L	SW846	6010B	01/25-01/28/02	ER5J41AU
Zinc	0.060 J,L	0.020	mg/L	SW846	6010B	01/25-01/28/02	ER5J41AV
Arsenic	ND	O.010 Dilution Facto	mg/L	SW846	6010B	01/25-01/28/02	ER5J41AG
Baríum	ND	0.20 Dilution Facto	mg/L	SW846	6010B	01/25-01/28/02	ER5J41AC
Amium	ND	0.0050 Dilution Facto		SW846	6010B	01/25-01/28/02	ER5J41AD
Lead	ND	0.0030 Dilution Facto		SW846	6010B	01/25-01/28/02	ER5J41AH
Chromium	ND	0.010 Dilution Facto	mg/L r: 1	SW846	6010B	01/25-01/28/02	ER5J41AE
Selenium	ND	0.0050 Dilution Facto	-	SW846	6010B	01/25-01/28/02	ER5J41AJ
Silver	ND	0.010 Dilution Facto	mg/L	SW846	6010B	01/25-01/28/02	ER5J41AF
Mercury	ND	0.00020 Dilution Facto	-	SW846	7470A	01/25-01/28/02	ER5J41AK

NOTE(S):

J Method blank contamination. The associated method blank contains the target analyte at a reportable level.

L. Serial dilution of a digestate in the analytical batch indicates that physical and chemical interferences are present.

Client Sample ID: TW-02

GC/MS Volatiles

Lot-Sample #...: A2A240105-011 Work Order #...: ER5J41AA Matrix..... WG

Date Sampled...: 01/23/02 13:20 Date Received..: 01/24/02 Prep Date....: 01/25/02 Analysis Date..: 01/25/02

Prep Batch #...: 2028132

Dilution Factor: 1	Method SW846 8260B			
		REPORTING		
PARAMETER	RESULT	LIMIT	UNITS	
Chloromethane	ND	1.0	ug/L	
Bromomethane	ND	1.0	ug/L	
Vinyl chloride	ND	1.0	ug/L	
Chloroethane	ND	1.0	ug/L	
Methylene chloride	ND	1.0	ug/L	
Acetone	ND	1.0	ug/L	
Carbon disulfide	ND	1.0	ug/L	
1,1-Dichloroethene	ND	1.0	ug/L	
1,1-Dichloroethane	ND	1.0	ug/L	
trans-1,2-Dichloroethene	ND	0.50	ug/L	
cis-1,2-Dichloroethene	ND	0.50	ug/L	
Chloroform	ND	1.0	ug/L	
1,2-Dichloroethane	ND	1.0	ug/L	
)-Butanone	ND	10	ug/L	
1,1,1-Trichloroethane	ND	1.0	ug/L	
Carbon tetrachloride	ND	1.0	ug/L	
Bromodichloromethane	ND	1.0	ug/L	
1,2-Dichloropropane	ND	1.0	ug/L	
cis-1,3-Dichloropropene	ND	1.0	ug/L	
Trichloroethene	ND	1.0	ug/L	
Dibromochloromethane	ND	1.0	ug/L	
1,1,2-Trichloroethane	ND	1.0	ug/L	
Benzene	ND	1.0	ug/L	
trans-1,3-Dichloropropene	ND	1.0	ug/L	
Bromoform	ND	1.0	ug/L	
4-Methyl-2-pentanone	ND	10	ug/L	
2-Hexanone	ND	10	ug/L	
Tetrachloroethene	ND	1.0	ug/L	
1,1,2,2-Tetrachloroethane	ND	1.0	ug/L	
Toluene	ND	1.0	ug/L	
Chlorobenzene	ND	1.0	ug/L	
Ethylbenzene	ND	1.0	ug/L	
Styrene	ND	1.0	ug/L	
Xylenes (total)	ND	1.0	ug/L	
	PERCENT	RECOVERY		
SURROGATE	RECOVERY	LIMITS		
Dibromofluoromethane	100	(73 - 122)		
), 2-Dichloroethane-d4	98	(61 - 128)		
oluene-d8	86	(76 - 110)		

	PERCENT	RECOVERY
SURROGATE	RECOVERY	LIMITS
Dibromofluoromethane	100	(73 - 122)
y 2-Dichloroethane-d4	98	(61 - 128)
∠oluene-d8	86	(76 - 110)
4-Bromofluorobenzene	105	(74 - 116)

Client Sample ID: SB-05 12-14

GC/MS Volatiles

Lot-Sample #: A2A240105-010 Date Sampled: 01/23/02 11:20 Prep Date: 01/24/02 Prep Batch #: 2025140 Dilution Factor: 1.3	Date Received:	01/24/02	Matrix SO
% Moisture: 8.9	Method	SW846 8260	В
		REPORTING	
PARAMETER	RESULT	LIMIT	UNITS
Benzene	ND	7.1.	ug/kg
Ethylbenzene	ND	7.1	ug/kg
Methyl tert-butyl ether	ND	29	ug/kg
Toluene	ND	7.1	ug/kg
Xylenes (total)	ND	14	ug/kg
SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS	
Dibromofluoromethane	90	(59 - 138)	V.
1,2-Dichloroethane-d4	87	(61 - 130)	
Toluene-d8	93	(60 - 143)	
1-Bromofluorobenzene	92	(47 - 158)	

Results and reporting limits have been adjusted for dry weight.

NOTE(S):

Client Sample ID: SB-05 9-11

GC/MS Volatiles

Lot-Sample #: A2A240105-009 Date Sampled: 01/23/02 11:00 Prep Date: 01/24/02 Prep Batch #: 2025140 Dilution Factor: 1.74		01/24/02	Matrix: SO
% Moisture: 6.7	Method:	SW846 8260	В
		REPORTING	
PARAMETER	RESULT	LIMIT	UNITS
Benzene	ND	9.3	ug/kg
Ethylbenzene	ND	9.3	ug/kg
Methyl tert-butyl ether	ND	37	ug/kg
Toluene	ND	9.3	ug/kg
Xylenes (total)	ND	19	ug/kg
	PERCENT	RECOVERY	•
SURROGATE	RECOVERY	LIMITS	
Dibromofluoromethane	87	(59 - 138)	
1,2-Dichloroethane-d4	79	(61 - 130)	
Toluene-d8	91	(60 - 143)	
4-Bromofluorobenzene) NOTE(S):	92	(47 - 158)	

Results and reporting limits have been adjusted for dry weight.

Client Sample ID: SB-04 2-4

General Chemistry

Lot-Sample #...: A2A240105-008 Work Order #...: ER5J0 Matrix.....: SO

Date Sampled...: 01/23/02 09:55 Date Received..: 01/24/02

% Moisture....; 21

 PARAMETER
 RESULT
 RL
 UNITS
 METHOD
 ANALYSIS
 DATE
 BATCH #

 Percent Solids
 79.5
 10.0
 %
 MCAWW 160.3 MOD
 01/25-01/28/02
 2025176

Dilution Factor: 1

Client Sample ID: SB-04 2-4

GC Semivolatiles

- -	01/23/02 09:55 01/24/02 2024152	Work Order #: Date Received: Analysis Date:	01/24/02	Matrix SO
% Moisture:	21	Method:	SW846 8015	В
PARAMETER TPH (as Diesel)		RESULT 180	REPORTING LIMIT 130	UNITS mg/kg
SURROGATE C9 (nonane)	-	PERCENT RECOVERY 33 DIL	RECOVERY LIMITS (10 - 110)	
NOTE(S):		1007		

DIL. The concentration is estimated or not reported due to dilution or the presence of interfering analytes.

Client Sample ID: SB-04 2-4

GC Volatiles

Lot-Sample #: A2A Date Sampled: 01/ Prep Date: 01/ Prep Batch #: 202 Dilution Factor: 1	/23/02 09:55 1 /24/02		: 01/24/02	Matrix: SO
% Moisture: 21	1	Method	: SW846 8015	MOD
			REPORTING	
PARAMETER		RESULT	LIMIT	UNITS
TPH (as Gasoline)]	ND	130	ug/kg
		PERCENT	RECOVERY	
SURROGATE		RECOVERY	LIMITS	
Trifluorotoluene		32	(10 - 150)	

NOTE(S):

Client Sample ID: SB-04-0-0.5

General Chemistry

Lot-Sample #...: A2A240105-007 Work Order #...: ER5JN
Date Sampled...: 01/23/02 09:45 Date Received..: 01/24/02 Matrix..... \$0

% Moisture....: 12

PREPARATION-PREP ANALYSIS DATE BATCH # PARAMETER RESULT RL UNITS METHOD MCAWW 160.3 MOD 01/25-01/28/02 2025176 Percent Solids 87.6 10.0

Client Sample ID: SB-04-0-0.5

GC Semivolatiles

Date Sampled: Prep Date: Prep Batch #:	01/23/02 09:45 01/24/02 2024152	Work Order #: Date Received: Analysis Date:	01/24/02	Matrix; SO
Dilution Factor:	5			
% Moisture:	12	Method:	SW846 8015	В
			REPORTING	
PARAMETER		RESULT	LIMIT	UNITS
TPH (as Diesel)		140	57	mg/kg
		PERCENT	RECOVERY	
SURROGATE		RECOVERY	LIMITS	
C9 (nonane)		30 DIL	(10 - 110)	

NOTE(S):

DIL The concentration is estimated or not reported due to dilution or the presence of interfering analytes.

Client Sample ID: SB-04-0-0.5

GC Volatiles

	— — — — — — — — — — — — — — — — — — —	.: 01/24/02	atrix: SO
% Moisture: 12	Method	.: SW846 8015 MOD	
PARAMETER	RESULT	REPORTING LIMIT UNITS	
TPH (as Gasoline)	ND	110 ug/kg	· · · · · · · · · · · · · · · · · · ·
SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS	
Trifluorotoluene	12	(10 - 150)	•

NOTE(S):

Client Sample ID: SB-03 2-4

General Chemistry

Lot-Sample #...: A2A240105-006 Work Order #...: ER5JM Matrix..... S0

Date Sampled...: 01/23/02 09:35 Date Received..: 01/24/02

% Moisture....: 16

 PARAMETER
 RESULT
 RL
 UNITS
 METHOD
 ANALYSIS DATE
 BATCH #

 Percent Solids
 83.9
 10.0
 %
 MCAWW 160.3 MOD
 01/25-01/28/02
 2025176

Client Sample ID: SB-03 2-4

GC Semivolatiles

Date Sampled:	01/23/02 09:35 01/24/02	Work Order #: Date Received: Analysis Date:	01/24/02	Matrix SO
Dilution Factor:				
% Moisture:	16	Method:	SW846 8015B	
			REPORTING	
PARAMETER		RESULT	LIMIT (JNITS

PERCENT

30

RECOVERY

12

SURROGATE
C9 (nonane)

TPH (as Diesel)

RECOVERY

LIMITS (10 - 110)

mg/kg

NOTE(S):

Client Sample ID: SB-03 2-4

GC Volatiles

Lot-Sample #: Date Sampled: Prep Date: Prep Batch #:	01/23/02 09:35 01/24/02		01/24/02	Matrix SO
Dilution Factor:	T _{urba}	Method:	SW846 8015	MOD
PARAMETER TPH (as Gasoline)		RESULT ND	REPORTING LIMIT	UNITS ug/kg
SURROGATE		PERCENT RECOVERY	RECOVERY LIMITS	
Trifluorotoluene		21	(10 - 150)	

NOTE(S):

Client Sample ID: SB-03 0-0.5

General Chemistry

Lot-Sample #...: A2A240105-005 Work Order #...: ER5JJ Matrix.....: SO Date Sampled...: 01/23/02 09:25 Date Received..: 01/24/02

% Moisture....: 6.5

 PARAMETER
 RESULT
 RL
 UNITS
 METHOD
 ANALYSIS
 DATE
 BATCH #

 Percent Solids
 93.5
 10.0
 %
 MCAWW 160.3 MOD
 01/25-01/28/02
 2025176

Client Sample ID: SB-03 0-0.5

GC Semivolatiles

all v	01/23/02 09:25	Work Order #: Date Received: Analysis Date:	01/24/02	Matrix: SO
Prep Batch #:	2024152			
Dilution Factor:	1			
% Moisture:	6.5	Method:	SW846 8015E	t .
			REPORTING	
PARAMETER		RESULT	LIMIT	UNITS
TPH (as Diesel)		26	11	mg/kg
		PERCENT	RECOVERY	
SURROGATE		RECOVERY	LIMITS	
C9 (nonane)		31	(10 - 110)	

NOTE(S):

Client Sample ID: SB-03 0-0.5

GC Volatiles

Lot-Sample #: Date Sampled: Prep Date: Prep Batch #: Dilution Factor:	01/23/02 09:25 01/24/02 2025197	Date Received:	01/24/02	Matrix: SO
% Moisture:	_	Method:	SW846 8015	MOD
			REPORTING	
PARAMETER	And the second s	RESULT	LIMIT	UNITS
TPH (as Gasoline)		ND	110	ug/kg
	•	PERCENT	RECOVERY	
SURROGATE		RECOVERY	LIMITS	
Trifluorotoluene		22	(10 - 150)	

NOTE(S):

Client Sample ID: SB-02 1.5-2.0

General Chemistry

Lot-Sample #...: A2A240105-004 Work Order #...: ER5JH Matrix.....: S0

Date Sampled...: 01/23/02 09:00 Date Received..: 01/24/02

% Moisture....: 13

 PARAMETER
 RESULT
 RL
 UNITS
 METHOD
 ANALYSIS DATE
 BATCH #

 Percent Solids
 86.7
 10.0
 %
 MCAWW 160.3 MOD
 01/25-01/28/02
 2025176

Client Sample ID: SB-02 1.5-2.0

GC Semivolatiles

Lot-Sample #: A2A240105-004 Date Sampled: 01/23/02 09:00 Prep Date: 01/24/02 Prep Batch #: 2024151	Date Received:	01/24/02	Matrix S0
Dilution Factor: 1 % Moisture: 13	Method	SW846 8082	
		5,7010 0000	
		REPORTING	
PARAMETER	RESULT	LIMIT	UNITS
Aroclor 1016	ND	38	ug/kg
Aroclor 1221	ND	38	ug/kg
Aroclor 1232	ND	38	ug/kg
Aroclor 1242	ND	38	ug/kg
Aroclor 1248	ND	38	ug/kg
Aroclor 1254	ND	38	ug/kg
Aroclor 1260	ND	38	ug/kg
	PERCENT	RECOVERY	
SURROGATE	RECOVERY	LIMITS	
Tetrachloro-m-xylene	79	$\overline{(31 - 127)}$	
Decachlorobiphenyl	72	(23 - 141)	
)			
MOTE(S):		nijah launa kelihila lis kalumatira ara aladamakan aramaman aramatiyu a kalumaka ya	

Client Sample ID: SB-02 1.5-2.0

GC Semivolatiles

Lot-Sample #: A2A240105-0 Date Sampled: 01/23/02 09 Prep Date: 01/24/02 Prep Batch #: 2024152 Dilution Factor: 2		01/24/02	Matrixso
% Moisture: 13	Method	: SW846 8015	В
PARAMETER TPH (as Diesel)	RESULT 69	REPORTING LIMIT 23	UNITS mg/kg
SURROGATE C9 (nonane)	PERCENT RECOVERY 28	RECOVERY LIMITS (10 - 110)	

NOTE(S):

Client Sample ID: SB-02 1.5-2.0

GC Volatiles

Lot-Sample #: Date Sampled: Prep Date: Prep Batch #: Dilution Factor:	01/23/02 09:00 01/24/02 2025197		01/24/02	Matrix: SO
% Moisture:	13	Method:	SW846 8015	MOD
PARAMETER TPH (as Gasoline)		RESULT ND	REPORTING LIMIT 120	UNITS
TPH (as Gasorine)		MD	120	ug/kg
		PERCENT	RECOVERY	
SURROGATE		RECOVERY	LIMITS	
Trifluorotoluene		23	(10 - 150)	

Client Sample ID: SB-02 0-0.5

General Chemistry

Lot-Sample #...: A2A240105-003 Work Order #...: ER5JF Matrix.....: S0

Date Sampled...: 01/23/02 08:50 Date Received..: 01/24/02

% Moisture....: 11

 PARAMETER
 RESULT
 RL
 UNITS
 METHOD
 ANALYSIS DATE
 BATCH #

 Percent Solids
 89.2
 10.0
 %
 MCAWW 160.3 MOD
 01/25-01/28/02
 2025176

Client Sample ID: SB-02 0-0.5

GC Semivolatiles

Lot-Sample #: A2A240105-003 Date Sampled: 01/23/02 08:50 Prep Date: 01/24/02 Prep Batch #: 2024151 Dilution Factor: 1		01/24/02	Matrix: SO
% Moisture: 11	Method:	SW846 8082	
		REPORTING	
PARAMETER	RESULT	LIMIT	UNITS
Aroclor 1016	ND	37	ug/kg
Aroclor 1221	ND	37	ug/kg
Aroclor 1232	ND	37	ug/kg
Aroclor 1242	ND	37	ug/kg
Aroclor 1248	ND	37	ug/kg
Aroclor 1254	ND	37	ug/kg
Aroclor 1260	64	37	ug/kg
	PERCENT	RECOVERY	
SURROGATE	RECOVERY	LIMITS	
Tetrachloro-m-xylene	78	(31 - 127)	
Decachlorobiphenyl	135	(23 - 141)	
NOTE(S):			

Client Sample ID: SB-02 0-0.5

GC Semivolatiles

Lot-Sample #: A2A240105-003 Date Sampled: 01/23/02 08:50			Matrix 80
=	Analysis Date:		
Prep Batch #: 2024152			
Dilution Factor: 5			
% Moisture: 11	Method:	SW846 8015	B
		REPORTING	
The second was the second seco	and and one of the local		To the state that any
PARAMETER	RESULT	LIMIT	UNITS
TPH (as Diesel)	190	56	mg/kg
	PERCENT	RECOVERY	
SURROGATE	RECOVERY	LIMITS	
C9 (nonane)	28 DIL	(10 - 110)	
NOTE(S):			2/4

DIL The concentration is estimated or not reported due to dilution or the presence of interfering analytes.

Client Sample ID: SB-02 0-0.5

GC Volatiles

-	•	01/24/02	Matrix: SO
% Moisture: 11	Method		MOD
PARAMETER TPH (as Gasoline)	RESULT ND	EPORTING LIMIT 110	UNITS ug/kg
SURROGATE Trifluorotoluene	PERCENT RECOVERY 25	RECOVERY LIMITS (10 - 150)	

NOTE (S):

Client Sample ID: SB-01 1.5-2.0

General Chemistry

Lot-Sample #...: A2A240105-002 Work Order #...: ER5JC Matrix.....: S0
Date Sampled...: 01/23/02 08:40 Date Received..: 01/24/02

% Moisture....: 11

PREPARATION- PREP RL UNITS METHOD ANALYSIS DATE BATCH # MCAWW 160.3 MOD 01/25-01/28/02 2025176 RESULT PARAMETER METHOD Percent Solids 89.5 10.0 %

Client Sample ID: SB-01 1.5-2.0

GC Semivolatiles

Lot-Sample #: A2A240105-002 Date Sampled: 01/23/02 08:40			Matrix S0
-	Analysis Date:		
Prep Batch #: 2024151	amanjuno nuco. «	01/2//02	
Dilution Factor: 1			
% Moisture: 11	Method	SW846 8082	
		54010 000	
		REPORTING	
PARAMETER `	RESULT	LIMIT	UNITS
Aroclor 1016	ND	37	ug/kg
Aroclor 1221	ND	37	ug/kg
Aroclor 1232	ND	37	ug/kg
Aroclor 1242	ND	37	ug/kg
Aroclor 1248	ND	37	ug/kg
Aroclor 1254	ND	37	ug/kg
Aroclor 1260	ND	37	ug/kg
	PERCENT	RECOVERY	
SURROGATE	RECOVERY	LIMITS	•
Tetrachloro-m-xylene	89	(31 - 127)	
Pecachlorobiphenyl	92	(23 - 141)	
)			
NOTE(S):			

Client Sample ID: SB-01 1.5-2.0

GC Semivolatiles

Lot-Sample #: A2A240105-002 Date Sampled: 01/23/02 08:40 Prep Date: 01/24/02 Prep Batch #: 2024152 Dilution Factor: 1		01/24/02	Matrix SO
% Moisture: 11	Method	SW846 8015	В
PARAMETER TPH (as Diesel)	RESULT	REPORTING LIMIT 11	UNITS mg/kg
SURROGATE C9 (nonane)	PERCENT RECOVERY 31	RECOVERY LIMITS (10 - 110)	

NOTE(S):

Client Sample ID: SB-01 1.5-2.0

GC Volatiles

Lot-Sample #: Date Sampled: Prep Date: Prep Batch #:	01/23/02 08:40 01/24/02 2025197		01/24/02	Matrix SO
Dilution Factor: Moisture:	_	Method:	SW846 8015	MOD
PARAMETER TPH (as Gasoline)		RESULT ND	LIMIT 110	UNITS ug/kg
SURROGATE Trifluorotoluene	horamony they the part of the	PERCENT RECOVERY	RECOVERY LIMITS (10 - 150)	

NOTE(S):

Client Sample ID: SB-01 0-0.5

General Chemistry

Lot-Sample #...: A2A240105-001 Work Order #...: ER5H3 Matrix.....: S0

Date Sampled...: 01/23/02 08:30 Date Received..: 01/24/02

% Moisture...: 12

 PARAMETER
 RESULT
 RL
 UNITS
 METHOD
 ANALYSIS
 DATE
 BATCH #

 Percent Solids
 88.1
 10.0
 %
 MCAWW 160.3 MOD
 01/25-01/28/02
 2025176

Client Sample ID: SB-01 0-0.5

GC Semivolatiles

Lot-Sample #: A2A240105-001			Matrix SO
Date Sampled: 01/23/02 08:30	Date Received:	01/24/02	
Prep Date: 01/24/02	Analysis Date:	01/27/02	
Prep Batch #: 2024151			
Dilution Factor: 1			
% Moisture: 12	Method:	SW846 8082	
		REPORTING	
PARAMETER	RESULT	LIMIT	UNITS
Aroclor 1016	ND	37	ug/kg
Aroclor 1221	ND	37	ug/kg
Aroclor 1232	ND	37	ug/kg
Aroclor 1242	ND	37	ug/kg
Aroclor 1248	ND	37	ug/kg
Aroclor 1254	ND	37	ug/kg
Aroclor 1260	71	37	ug/kg
	PERCENT	RECOVERY	
SURROGATE	RECOVERY	LIMITS	
Tetrachloro-m-xylene	96	(31 - 127)	
ecachlorobiphenyl	192 *	(23 - 141)	
t			

NOTE (S):

^{*} Surrogate recovery is outside stated control limits.

Client Sample ID: SB-01 0-0.5

GC Semivolatiles

Lot-Sample #: A2A240105-001 Date Sampled: 01/23/02 08:30			Matrix SO
-	Analysis Date:		
Prep Batch #: 2024152			
Dilution Factor: 5			
% Moisture: 12	Method:	SW846 8015	В
		The street was the section of the street	
		REPORTING	
PARAMETER	RESULT	LIMIT	UNITS
TPH (as Diesel)	220	57	mg/kg
	PERCENT	RECOVERY	
SURROGATE	RECOVERY	LIMITS	
C9 (nonane)	23 DIL	(10 - 110)	
NOTE(S):			

DIL The concentration is estimated or not reported due to dilution or the presence of interfering analytes. Results and reporting limits have been adjusted for dry weight.

Client Sample ID: SB-01 0-0.5

GC Volatiles

Lot-Sample #: A2 Date Sampled: 01 Prep Date: 01 Prep Batch #: 20 Dilution Factor: 1	1/23/02 08:30 1/24/02	Date Received:	01/24/02	Matrix SO
% Moisture: 12	2	Method:	SW846 8015	MOD
PARAMETER TPH (as Gasoline)		RESULT ND	7	UNITS ug/kg
SURROGATE Trifluorotoluene		PERCENT RECOVERY 24	RECOVERY LIMITS (10 - 150)	~3, ·· =

NOTE(S):

SAMPLE SUMMARY

A2A240105

WO # 5	BAMPLE#	CLIENT SAMPLE ID	SAMPLED DATE	SAMP TIME
ER5H3	001	SB-01 0-0.5	01/23/02	08:30
ER5JC	002	SB-01 1.5-2.0	01/23/02	08:40
ER5JF	003	SB-02 0-0.5	01/23/02	08:50
ER5JH	004	SB-02 1.5-2.0	01/23/02	09:00
ER5JJ	005	SB-03 0-0.5	01/23/02	09:25
ER5JM	006	SB-03 2-4	01/23/02	09:35
ER5JN	007	SB-04-0-0.5	01/23/02	09:45
ER5J0	800	SB-04 2-4	01/23/02	09:55
ER5J2	009	SB-05 9-11	01/23/02	11:00
ER5J3	010	SB-05 12-14	01/23/02	11:20
ER5J4	011	TW-02	01/23/02	13:20
ER5J8	012	TW-03	01/23/02	14:15

NOTE(S):

- The analytical results of the samples listed above are presented on the following pages.
- All calculations are performed before rounding to avoid round-off errors in calculated results.
- Results noted as "ND" were not detected at or above the stated limit.
- This report must not be reproduced, except in full, without the written approval of the laboratory.
- results for the following parameters are never reported on a dry weight basis: color, corrosivity, density, flashpoint, ignitability, layers, odor, it filter test, pli, porosity pressure, reactivity, redox potential, specific gravity, spot tests, solids, solubility, temperature, viscosity, and weight.

ANALYTICAL METHODS SUMMARY

A2A240105

PARAMETER	ANALYTICAL METHOD
pH (Electrometric) Acidity (Titrimetric) Extractable Petroleum Hydrocarbons Inductively Coupled Plasma (ICP) Metals	MCAWW 150.1 MCAWW 305.1 SW846 8015B SW846 6010B
Mercury in Liquid Waste (Manual Cold-Vapor) PCBs by SW-846 8082	SW846 7470A SW846 8082
Specific Conductance Total Cyanide	MCAWW 120.1 MCAWW 335.2
Total Residue as Percent Solids Trace Inductively Coupled Plasma (ICP) Metals Volatile Organics by GC/MS	MCAWW 160.3 MOD SW846 6010B SW846 8260B
Volatile Petroleum Hydrocarbons	SW846 8015 MOD

References:

MCAWW	"Methods for Chemical Analysis of Water and Wastes", EPA-600/4-79-020, March 1983 and subsequent revisions.
SW846	"Test Methods for Evaluating Solid Waste, Physical/Chemical Methods". Third Edition. November 1986 and its updates.

QUALITY CONTROL ELEMENTS OF SW-846 METHODS (Continued)

 Blanks will be accepted if the compounds/elements detected are not present in any of the associated environmental samples.

Failure to meet these Method Blank criteria requires the repreparation and reanalysis of all samples in the QC batch.

MATRIX SPIKE/MATRIX SPIKE DUPLICATE

A Matrix Spike and a Matrix Spike Duplicate are a pair of environmental samples to which known concentrations of a full or partial set of target analytes are added. The MS/MSD results are determined in the same manner as the results of the environmental sample used to prepare the MS/MSD. The analyte recoveries and the relative percent differences (RPDs) of the recoveries are calculated and used to evaluate the effect of the sample matrix on the analytical results. Due to the potential variability of the matrix of each sample, the MS/MSD results may not have an immediate bearing on any samples except the one spiked; therefore, the associated batch MS/MSD may not reflect the same compounds as the samples contained in the analytical report. When these MS/MSD results fail to meet acceptance criteria, the data is evaluated. If the LCS is within acceptance criteria, the batch is considered acceptable. The acceptance criteria do not apply to samples that are diluted for organics if the native sample amount is 4x the concentration of the spike.

For certain methods, a Matrix Spike/Sample Duplicate (MS/DU) may be included in the QC batch in place of the MS/MSD. For the parameters (i.e. pH, ignitability) where it is not possible to prepare a spiked sample, a Sample Duplicate may be included in the QC batch. However, a Sample Duplicate is less likely to provide usable precision statistics depending on the likelihood of finding concentrations below the standard reporting limit. When the Sample Duplicate result fails to meet acceptance criteria, the data is evaluated.

SURROGATE COMPOUNDS

In addition to these batch-related QC indicators, each organic environmental and QC sample is spiked with surrogate compounds. Surrogates are organic chemicals that behave similarly to the analytes of interest and that are rarely present in the environment. Surrogate recoveries are used to monitor the individual performance of a sample in the analytical system.

If surrogate recoveries are biased high in the LCS, LCSD, or the Method Blank, and the associated sample(s) are ND, the batch is acceptable. Otherwise, if the LCS, LCSD, or Method Blank surrogate(s) fail to meet recovery criteria, the entire sample batch is reprepade and reanalyzed. If the surrogate recoveries are outside criteria for environmental samples, the samples will be reprepade and reanalyzed unless there is objective evidence of matrix interference or if the sample dilution is greater than the threshold outlined in the associated method SOP.

For the GC/MS BNA methods, the surrogate criterion is that two of the three surrogates for each fraction must meet acceptance criteria. The third surrogate must have a recovery of ten percent or greater.

For the Pesticide, PCB, PAH, and Herbicide methods, the surrogate criterion is that one of two surrogate compounds must meet acceptance criteria.



STL North Canton Certifications and Approvals:

Alabama (#41170), California (#2157), Connecticut (#PH-0590), Florida (#E87225),
Illinois (#100439), Kansas (#E10336), Kentucky (#90021), Massachusetts (#M-0H048),
Maryland (#272), Minnesota (#39-999-348), Missouri (#6090), New Jersey (#74001),
New York (#10975), North Dakota (#R-156), Ohio (#6090), Ohio VAP (#CL0024),
Pennsylvania (#68-340), Rhode Island (#237), South Carolina (#92007001, #92007002, #92007003),
Tennessee (#02903), West Virginia (#210), Wisconsin (#999518190),NAVY, ARMY,
USDA Soil Permit, ACIL Seal of Excellence — Participating Lab Status Award (#82)

QUALITY CONTROL ELEMENTS OF SW-846 METHODS

STL North Canton conducts a quality assurance/quality control (QA/QC) program designed to provide scientifically valid and legally defensible data. Toward this end, several types of quality control indicators are incorporated into the QA/QC program, which is described in detail in QA Policy, QA-003. These indicators are introduced into the sample testing process to provide a mechanism for the assessment of the analytical data.

OC BATCH

Environmental samples are taken through the testing process in groups called QUALITY CONTROL BATCHES (QC batches). A QC batch contains up to twenty environmental samples of a similar matrix (water, soil) that are processed using the same reagents and standards. STL North Canton requires that each environmental sample be associated with a QC batch.

Several quality control samples are included in each QC batch and are processed identically to the twenty environmental samples. These QC samples include a METHOD BLANK (MB), a LABORATORY CONTROL SAMPLE (LCS) and, where appropriate, a MATRIX SPIKE/MATRIX SPIKE DUPLICATE (MS/MSD) pair or a MATRIX SPIKE/SAMPLE DUPLICATE (MS/DU) pair. If there is insufficient sample to perform an MS/MSD or an MS/DU, then a LABORATORY CONTROL SAMPLE DUPLICATE (LCSD) is included in the QC batch.

LABORATORY CONTROL SAMPLE

The Laboratory Control Sample is a QC sample that is created by adding known concentrations of a full or partial set of target analytes to a matrix similar to that of the environmental samples in the QC batch. The LCS analyte recovery results are used to monitor the analytical process and provide evidence that the laboratory is performing the method within acceptable guidelines. All control analytes indicated by a bold type in the LCS must meet acceptance criteria. Failure to meet the established recovery guidelines requires the repreparation and reanalysis of all samples in the QC batch. The only exception is that if the LCS recoveries are biased high and the associated sample is ND (non-detected) for the parameter(s) of interest, the batch is acceptable.

At times, a Laboratory Control Sample Duplicate (LCSD) is also included in the QC batch. An LCSD is a QC sample that is created and handled identically to the LCS. Analyte recovery data from the LCSD is assessed in the same way as that of the LCS. The LCSD recoveries, together with the LCS recoveries, are used to determine the reproducibility (precision) of the analytical system. Precision data are expressed as relative percent differences (RPDs). If the RPD fails for an LCS/LCSD and yet the recoveries are within acceptance criteria, the batch is still acceptable.

METHOD BLANK

The Method Blank is a QC sample consisting of all the reagents used in analyzing the environmental samples contained in the QC batch. Method Blank results are used to determine if interference or contamination in the analytical system could lead to the reporting of false positive data or elevated analyte concentrations. All target analytes must be below the reporting limits (RL) or the associated sample(s) must be ND except under the following circumstances:

Common organic contaminants may be present at concentrations up to 5 times the reporting limits. Common metals
contaminants may be present at concentrations up to 2 times the reporting limit, or the reported blank concentration
must be twenty fold less than the concentration reported in the associated environmental samples. (See common
laboratory contaminants listed below.)

Volatile (GC or GC/MS)	Semivolatile (GC/MS)	Metals
Methylene chloride	Phthalate Esters	Copper
Acetone		Iron
2-Butanone		Zinc
		Lead*

- for analyses run on TJA Trace ICP, ICPMS or GFAA only
- Organic blanks will be accepted if compounds detected in the blank are present in the associated samples at levels 10
 times the blank level. Inorganic blanks will be accepted if elements detected in the blank are present in the
 associated samples at 20 times the blank level.

CASE NARRATIVE

A2A240105

The following report contains the analytical results for ten solid samples and two water samples submitted to STL North Canton by RMT from the Charter Steel (Ohio) Site, project number 5891.01. The samples were received on January 24, 2002, according to documented sample acceptance procedures and were analyzed in accordance with Ohio Voluntary Action Program protocols (Lab Certification CL0024).

Acidity analyses were performed at STL Denver.

STL utilizes USEPA approved methods in all analytical work. The samples presented in this report were analyzed for the parameters listed on the analytical methods summary page in accordance with the methods indicated. Preliminary results were provided to Joel Hunt and Dave Misky on January 29, 2001. A summary of QC data for these analyses is included at the rear of the report.

The results included in this report have been reviewed for compliance with the laboratory QA/QC plan. All data have been found to be compliant with laboratory protocol.

SUPPLEMENTAL QC INFORMATION

SAMPLE RECEIVING

The samples were received at the laboratory at a temperature of 2.4° C.

TPH containers for samples SB-05 9-11 and SB-05 12-14 were not received until January 25th. The sample analysis were logged under a separate lot (A2A250196). Also, sample containers for SB-06 were not received.

GC VOLATILES

An LCS/LCSD was provided for batch 2025197 since there was insufficient sample volume to perform an MS/MSD.

METALS

Sample(s) that contained concentrations of target analyte(s) at a reportable level in the associated Method Blank(s) were flagged. Refer to the sample report pages for the affected analyte(s).

Serial dilution of a sample in this lot indicates that physical and chemical interferences were present. Refer to the sample report pages for the affected analytes.



STL North Canton 4101 Shuffel Drive NW North Canton, OH 44720-6961

Tel: 330 497 9396 Fax: 330 497 0772 www.stl-inc.com

ANALYTICAL REPORT

PROJECT NO. 5891.01

CHARTER STEEL (OHIO)

Lot #: A2A240105

Dave Misky

RMT Inc 150 N Patrick Blvd Suite 180 Brookfield, WI 53045-5854

SEVERN TRENT LABORATORIES, INC.

Kenneth J. Kuzior Project Manager

February 4, 2002

STL North Canton Field Analytical Services and Courier Cooler Receipt Documentation



Severn Trent Laboratories, Inc. 4101 Shuffle Drive N.W. North Canton, Ohio 44720

> 330-497-9396 Phone 330-497-0772 Fax

Coolers were taped and or sealed with Custody seals. Courier/FAS did not break seals or
remove tape to enter coolers to locate C.O.C forms.
Samples picked up at $AS = W GUARD$ on $7/25/02 /2/5$ (date/time)
Samples relinquished to Sample Receiving on 1/25/02 /320 (date/time)
Samples relinquished to Sample Receiving on 1/25/02 1320 (date/time) By March Art No. Samples relinquished to Sample Receiving on 1/25/02 1320 (date/time) By March Art No.

No sample Chain of Custody forms visible on top of coolers to be signed.



CHAIN OF CUSTODY

EAG WORK ORDER # ___

7118 INDUSTRIAL PARK BLVD. MENTOR, OHIO 44060-5314 (440) 951-3514 FAX (440) 951-3774 (800) 875-3514 PLEASE DO NOT SEPARATE FORMS PAGE ___OF__ website: www.eagroup-ahlo.com customerservice@eagroup-ahlo.com Company Name PMT ANALYSIS REQUESTED TURNABOUND (V Report Address 5040 SAWMILL SEE REVERSE City DUZY 3 Zio 2,5 FOR Billing Address HOLD State Some City Zip NORMAL. されない TIME Fax Phone RESULTS (/) S RESTRICTIONS Report Attention JOEL HUST MAIL Project Name $\langle c \rangle$ CHARTER STEEL SECTIO P.O.# 5991.01 MICH FAX SAMPLE 2,000 COLLECTION COLLECTION CO tig-REMARKS: Ta CONDITION, MATRIX SAMPLE IDENTIFICATION TIME DATE ETC.... 58-06 9-11 Χ X 14:20 11/24/12 5010 X X 14:40 X 55-Co 11-13 500 H1 24102 11/25/12 X CiO500 13.0 X TW-CI χ X X 845 X. TW W TW-05 9:45 1 X MATE 1/23/07 11:00 X الألا² 12-14 1/23/02 53-US 11:20 X Sinc Relinquished by (sign) Date/Time Date/Time Received by (sign) Additional Comments: 1/25/02 / 10/37: Relinquished by (sign) Date/Time Received by (sign) Date/Time Date/Time Date/Time Relinquished by Received by (sign) / WHITE - FILE YELLOW - INVOICE Rev. 11 2/2000 PINK - REPORT GREEN - CUSTOMER

SAMPLE DUPLICATE EVALUATION REPORT

General Chemistry

Client Lot #...: A2A250196 Work Order #...: ER8Q9-SMP Matrix.....: WATER ER8Q9-DUP

Date Sampled...: 01/24/02 11:00 Date Received..: 01/25/02

% Moisture....: 100 Dilution Factor: Initial Wgt/Vol:

SAMPLE DUPLICATE EVALUATION REPORT

General Chemistry

Client Lot #...: A2A250196 Work Order #...: ER8K4-SMP Matrix.....: SOLID

' ER8K4-DUP

Date Sampled...: 01/24/02 10:10 Date Received..: 01/25/02

% Moisture....: 16

 PARAM RESULT
 RESULT
 UNITS
 RPD
 PREPARATION PREPA

Dilution Factor: 1

SAMPLE DUPLICATE EVALUATION REPORT

General Chemistry

Client Lot #:	A2A250196	Work Ord	ler #: El	R8D6-SMP Mat z R8D6-DUP	ix WG	
Date Sampled:	01/25/02 08:0	O Date Red	ceived: 0	1/25/02		
% Moisture:		Dilution	n Factor:	Initi	lal Wgt/Vol:	
	DUPLICATE		RPD		PREPARATION-	PREP
PARAM RESULT	RESULT	UNITS RE	D LIMIT	METHOD_	ANALYSIS DATE	BATCH #
Acidity				SD Lot-Sample #:	A2A250196-003	
ND	ND	mg/L 0	(0-10)	MCAWW 305.1	01/30/02	2030410
	Di	lution Factor:	: I			
Specific Conduct	ance			SD Lot-Sample #:	A2A250196-003	
1400	1500	umhos/cm 2.	.3 (0-20)	MCAWW 120.1	01/25/02	2025427
	Di	lution Factor:	: 1			

General Chemistry

Client Lot #...: A2A250196

Matrix..... WG

Date Sampled...: 01/25/02 08:45 Date Received..: 01/25/02

	PERCENT	RECOV	ERY		RPD			PREPARATION- PREP	
PARAMETER	RECOVERY	LIMIT	'S	RPD	LIMITS	METHOD		ANALYSIS DATE BATCH	<u> </u>
Total Cyanid	e		WO#:	ER8E	Elau-Ms/	ER8EE1A	V-MSD	MS Lot-Sample #: A2A250196	-004
	94	(40 -	130)			MCAWW :	335.2	01/29/02 2029173	3
	97	(40 -	130)	2.3	(0-99)	MCAWW :	335.2	01/29/02 202917:	3
			Dilut	ion Fa	ctor: 1				

NOTE(S):

General Chemistry

Client Lot #...: A2A250196 Matrix.....: WATER

Date Sampled...: 01/15/02 10:15 Date Received..: 01/16/02

	PERCENT	RECO	VERY		RPD			PREPARATION- PREP
PARAMETER	RECOVERY	LIMI	rs	RPD	LIMITS	METHOL)	ANALYSIS DATE BATCH #
Cyanide, Tot	al		WO#:	ER.QM	CX1.H6-MS/	ERQMX1E	I7-MSD	MS Lot-Sample #: A2A160210-001
	97	(40	- 130)			MCAWW	335.2	01/28/02 2028173
	92	(40	- 130)	5.5	(0-99)	MCAWW	335.2	01/28/02 2028173
			Dilut	ion Fa	ctor: 1			

NOTE(S):

TOTAL Metals

Client Lot #...: A2A250196 Matrix......: WATER

Date Sampled...: 01/23/02 10:15 Date Received..: 01/26/02

PERCENT RECOVERY RPD PREPARATION-WORK PARAMETER RECOVERY LIMITS RPD LIMITS METHOD ANALYSIS DATE ORDER # (53 - 135)01/28/02 ER9V81DL Mercury SW846 7470A 88 (53 - 135) 3.7 (0-20) SW846 7470A 01/28/02 ER9V81DM

Dilution Factor: 1

NOTE(S):

TOTAL Metals

Client Lot #...: A2A250196 Matrix....: WATER

Date Sampled...: 01/23/02 10:15 Date Received..: 01/26/02

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS RPD	RPD LIMITS	METHOD	PREPARATION- ANALYSIS DATE	WORK ORDER #
MS Lot-Sampl Copper	e #: A2A26 94 96	0136-001 Prep B (75 ~ 125) (75 - 125) 2.2 Dilution Face	(0-20)	SW846 6010B	01/28-01/29/02 01/28-01/29/02	
Nickel	91. 92	(75 - 125) (75 - 125) 1.8 Dilution Face		SW846 6010B SW846 6010B	01/28-01/29/02 01/28-01/29/02	
Zinc	96 99	(75 - 125) (75 - 125) 2.7 Dilution Fac		SW846 6010B SW846 6010B	01/28-01/29/02 01/28-01/29/02	
Arsenic	93 94	(75 - 125) (75 - 125) 1.3 Dilution Fac		SW846 6010B SW846 6010B	01/28-01/29/02 01/28-01/29/02	
rium	94 96	(75 - 125) (75 - 125) 1.4 Dilution Face		SW846 6010B SW846 6010B	01/28-01/29/02 01/28-01/29/02	
Cadmium	90 91	(75 - 125) (75 - 125) 1.6 Dilution Face		SW846 6010B SW846 6010B	01/28-01/29/02 01/28-01/29/02	
Lead	91 92	(75 - 125) (75 - 125) 0.89 Dilution Fact		SW846 6010B SW846 6010B	01/28-01/29/02 01/28-01/29/02	
Chromium	91 92	(75 - 125) (75 - 125) 1.4 Dilution Fact		SW846 6010B SW846 6010B	01/28-01/29/02 01/28-01/29/02	
Selenium	95 96	(75 - 125) (75 - 125) 1.2 Dilution Fact		SW846 6010B SW846 6010B	01/28-01/29/02 01/28-01/29/02	
Silver	103 105	(75 - 125) (75 - 125) 1.3 Dilution Fact		SW846 6010B SW846 6010B	01/28-01/29/02 01/28-01/29/02	

(Continued on next page)

GC/MS Volatiles

Client Lot #...: A2A250196 Work Order #...: ER6XQ1AC-MS Matrix....: WATER

MS Lot-Sample #: A2A240258-001 ER6XQ1AD-MSD

Date Sampled...: 01/23/02 13:15 Date Received..: 01/24/02 Prep Date....: 01/29/02 Analysis Date..: 01/29/02

Prep Batch #...: 2030138
Dilution Factor: 28571.43

	PERCENT	RECOVERY		RPD	
PARAMETER	RECOVERY	LIMITS	RPD	LIMITS	METHOD
1,1-Dichloroethene	88	(62 - 130)		***************************************	SW846 8260B
	90	(62 - 130)	2.7	(0-20)	SW846 8260B
Trichloroethene	121	(62 - 130)			SW846 8260B
	110	(62 - 130)	2.9	(0-20)	SW846 8260B
Benzene	95	(78 - 118)			SW846 8260B
	100	(78 - 118)	5.1	(0-20)	SW846 8260B
Toluene	102	(70 - 119)			SW846 8260B
	99	(70 ~ 119)	2.7	(0-20)	SW846 8260B
Chlorobenzene	102	(76 - 117)			SW846 8260B
	100	(76 - 117)	1.8	(0-20)	SW846 8260B
		PERCENT		RECOVERY	
RROGATE		RECOVERY		LIMITS	
bromofluoromethane		100		(73 - 122)
		98		(73 - 122	
1,2-Dichloroethane-d4		92		(61 - 128	
		91		(61 - 128)
Toluene-d8		104		(76 - 110	
		100		(76 - 110	,
4-Bromofluorobenzene		115		(74 - 116	
		111		(74 - 116	
				, . =	•

NOTE(S)

Calculations are performed before rounding to avoid round-off errors in calculated results.

General Chemistry

Client Lot #	: A2A250196	Matrix	: WATER
PARAMETER ph (liquid)	RECOVERY	RECOVERY PREPARATION- LIMITS METHOD ANALYSIS DATE Work Order #: ER9HClAA LCS Lot-Sample#: A2A250000- (97 - 103) MCAWW 150.1 01/25/02 Dilution Factor: 1	BATCH #
Cyanide, Total	96	Work Order #: ETACEIAC LCS Lot-Sample#: A2A280000- (65 - 114) MCAWW 335.2 01/28/02 Dilution Factor: 1	
Specific Conduc	tance 97	Work Order #: ER9HF1AC LCS Lot-Sample#: A2A250000- (75 - 125) MCAWW 120.1 01/25/02 Dilution Factor: 1	
Total Cyanide	98	Work Order #: ETC281AC LCS Lot-Sample#: A2A290000- (65 - 114) MCAWW 335.2 01/29/02 Dilution Factor: 10	

NOTE (S):

TOTAL Metals

Client Lot #:	A2A250196			Matrix	: WATER
PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	METHOD	PREPARATION- ANALYSIS DATE	WORK ORDER #
LCS Lot-Sample#: Copper	A2A280000- 100		tch #: 2028106 SW846 6010B or: 1	01/28-01/29/02	ER98C1CG
Nickel	99	(80 - 120) Dilution Facto	SW846 6010B	01/28-01/29/02	ER98C1CL
Zinc	104	(80 - 120) Dilution Facto	SW846 6010B	01/28-01/29/02	ER98C1CR
Arsenic	98	(80 - 120) Dilution Facto	SW846 6010B	01/28-01/29/02	ER98C1A3
Barium	98	(80 - 120) Dilution Facto	SW846 6010B	01/28-01/29/02	ER98ClA9
ad	99	(80 - 120) Dilution Facto	SW846 6010B	01/28-01/29/02	ER98C1A4
Cadmium	98	(80 - 120) Dilution Facto	SW846 6010B r: 1	01/28-01/29/02	ER98C1CC
Selenium	101	(80 - 120) Dilution Facto	SW846 6010B	01/28-01/29/02	ER98C1A5
Chromium	99	(80 - 120) Dilution Facto	SW846 6010B r: 1	01/28-01/29/02	ER98C1CE
Silver	110	(80 - 120) Dilution Facto	SW846 6010B r: 1	01/28-01/29/02	ER98C1CN
Mercury	93	(70 - 118) Dilution Facto	SW846 7470A r: 1	01/28/02	ER98C1CT

Calculations are performed before rounding to avoid round-off errors in calculated results.

NOTE(S):

GC Semivolatiles

Client Lot #...: A2A250196 Work Order #...: ETGG21AC-LCS Matrix.....: SOLID

LCS Lot-Sample#: A2A310000-152 ETGG21AD-LCSD

Prep Date....: 01/31/02 Analysis Date..: 02/01/02

Prep Batch #...: 2031152

Dilution Factor: 1

PARAMETER Total Petroleum Hydrocarbons-Extractable	PERCENT RECOVERÝ 65	RECOVERY LIMITS (37 - 153)	RPD	RPD LIMITS	METHOD SW846 8015B
	98	(37 - 153)	41	(0-98)	SW846 8015B
SURROGATE C9 (nonane)		PERCENT RECOVERY 31 31	RECOV <u>LIMIT</u> (10 -	110)	

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

GC Volatiles

Client Lot #...: A2A250196 Work Order #...: ETC2J1AC-LCS Matrix.....: SOLID

LCS Lot-Sample#: A2A290000-169 ETC2J1AD-LCSD

Prep Date....: 01/28/02 Analysis Date..: 01/28/02

Prep Batch #...: 2029169

Dilution Factor: 1

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD LIMITS	METHOD
TPH (as Gasoline)	97	(60 - 142)		SW846 8015 MOD
	95	(60 - 142)	1.1 (0-27)	SW846 8015 MOD
		PERCENT	RECOVERY	
SURROGATE		RECOVERY	LIMITS	
Trifluorotoluene		66	(10 - 150)	

67

(10 - 150)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

GC/MS Volatiles

Client Lot #...: A2A250196 Work Order #...: ETEMD1AC-LCS Matrix..... WATER

LCS Lot-Sample#: A2A300000-138 ETEMD1AD-LCSD

Prep Date....: 01/29/02 Analysis Date..: 01/29/02

Prep Batch #...: 2030138

Dilution Factor: 1

	PERCENT	RECOVERY	F	RPD	
PARAMETER	RECOVERY	LIMITS	RPD I	LIMITS	METHOD
1,1-Dichloroethene	99	(63 - 130)			SW846 8260B
	98	(63 - 130)	1.2	(0-20)	SW846 8260B
Trichloroethene	97	(75 - 122)			SW846 8260B
	99	(75 - 122)	1.5	(0-20)	SW846 8260B
Benzene	99	(80 - 116)			SW846 8260B
	101	(80 - 116)	2.3	(0-20)	SW846 8260B
Toluene	104	(74 - 119)			SW846 8260B
	104	(74 - 119)	0.59	(0-20)	SW846 8260B
Chlorobenzene	102	(76 - 117)			SW846 8260B
	104	(76 - 117)	2.1	(0-20)	SW846 8260B
			We said on a bring said		
		PERCENT	RECOVER	RY	
SURROGATE		RECOVERY	LIMITS		
\ipibromofluoromethane		99	(73 -]	L22)	
,		94	(73 - 1	122)	
1,2-Dichloroethane-d4		96	(61 - 1	L28)	
		92	(61 - 1	L28)	
Toluene-d8		107	(76 - 1	110)	
		106	(76 - 1	110)	
4-Bromofluorobenzene		107	(74 - 1	116)	
		112	(74 - 1)	116)	

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

GC/MS Volatiles

Client Lot #...: A2A250196 Work Order #...: ETEL31AC-LCS Matrix.....: SOLID

LCS Lot-Sample#: A2A300000-125 ETEL31AD-LCSD

Prep Date....: 01/29/02 Analysis Date..: 01/29/02

Prep Batch #...: 2030125

Dilution Factor: 1

	PERCENT	RECOVERY		RPD		
PARAMETER	RECOVERY	LIMITS	RPD	LIMITS	METHOI	
1,1-Dichloroethene	100	(55 - 142)	334		SW846	8260B
	98	(55 - 142)	2.2	(0-27)	SW846	8260B
Trichloroethene	97	(70 - 131)			SW846	8260B
	97	(70 - 131)	0.33	(0-23)	SW846	8260B
Chlorobenzene	98	(75 - 127)			SW846	8260B
	98	(75 - 127)	0.24	(0-22)	SW846	8260B
Benzene	100	(75 - 129)			SW846	8260B
	99	(75 - 129)	1.5	(0-20)	SW846	8260B
Toluene	98	(71 - 130)			SW846	8260B
	98	(71 - 130)	0.010	(0-24)	SW846	8260B
		PERCENT	RECOVE	ERY		
SURROGATE		RECOVERY	LIMITS	3		
ibromofluoromethane		101	(59 -	138)		
•		101	(59 ~	138)		
1,2-Dichloroethane-d4		100	(61 -	130)		
		100	(61 -	130)		
Toluene-d8		99	(60 -	143)		
		100	(60 -	143)		
4-Bromofluorobenzene		97	(47 -	158)		
	·	100	(47 -	158)		

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

General Chemistry

Client Lot #...: A2A250196

Matrix..... SOLID

REPORTING

PREPARATION-PREP

RESULT PARAMETER

LIMIT UNITS

ANALYSIS DATE BATCH #

Percent Solids

Work Order #: ETAA31AA MB Lot-Sample #: A2A280000-149

10.0 %

MCAWW 160.3 MOD

METHOD

01/28-01/29/02 2028149

Dilution Factor: 1

NOTE (S):

General Chemistry

NOTE(S):

Client Lot #: A	N2A250196			Matr	ix WA	TER
PARAMETER	RESULT	REPORTING LIMIT	G UNITS	METHOD	PREPARATION- ANALYSIS DATE	PREP BATCH #
Acidity	ND		mg/L	MB Lot-Sample #: MCAWW 305.1		2030410
Cyanide, Total	ND		mg/L	MB Lot-Sample #: MCAWW 335.2	The second secon	2028173
Specific Conductan	ce ND		umhos/cm	MB Lot-Sample #: MCAWW 120.1		2025427
Total Cyanide	ND		mg/L	MB Lot-Sample #: MCAWW 335.2		2029173

GC Semivolatiles

Client Lot #...: A2A250196 Work Order #...: ETGG21AA Matrix.....: SOLID

MB Lot-Sample #: A2A310000-152

Prep Date....: 01/31/02
Analysis Date..: 02/01/02
Prep Batch #...: 2031152

Dilution Factor: 1

NOTE(S):

REPORTING

 PARAMETER
 RESULT
 LIMIT
 UNITS
 METHOD

 TPH (as Diesel)
 ND
 10
 mg/kg
 SW846 8015B

PERCENT RECOVERY
SURROGATE RECOVERY LIMITS

C9 (nonane) 28 (10 - 110)

GC Volatiles

Client Lot #...: A2A250196 Work Order #...: ETC2J1AA Matrix.....: SOLID

MB Lot-Sample #: A2A290000-169
Prep Date....: 01/28/02

Dilution Factor: 1

PARAMETER RESULT LIMIT UNITS METHOD

TPH (as Gasoline) ND 100 ug/kg SW846 8015 MOD

PERCENT RECOVERY
SURROGATE RECOVERY LIMITS

Trifluorotoluene 27 (10 - 150)

NOTE(S):

GC/MS Volatiles

Client Lot #...: A2A250196 Work Order #...: ETEMD1AA Matrix.....: WATER

NOTE(S):

GC/MS Volatiles

Client Lot #...: A2A250196 Work Order #...: ETEMD1AA

MB Lot-Sample #: A2A300000-138

Matrix....: WATER

Analysis Date..: 01/29/02

Dilution Factor: 1

Prep Date....: 01/29/02

Prep Batch #...: 2030138

		REPORTI	NG	
PARAMETER	RESULT	LIMIT	UNITS	METHOD
Chloromethane	ND	1.0	ug/L	SW846 8260B
Bromomethane	ND	1.0	ug/L	SW846 8260B
Vinyl chloride	ND	1.0	ug/L	SW846 8260B
Chloroethane	ND	1.0	ug/L	SW846 8260B
Methylene chloride	ND	1.0	ug/L	SW846 8260B
Acetone	ND	10	ug/L	SW846 8260B
Carbon disulfide	ND	1.0	ug/L	SW846 8260B
1,1-Dichloroethene	ND	1.0	ug/L	SW846 8260B
1,1-Dichloroethane	ND	1.0	ug/L	SW846 8260B
trans-1,2-Dichloroethene	ND	0.50	ug/L	SW846 8260B
cis-1,2-Dichloroethene	ND	0.50	ug/L	SW846 8260B
Chloroform	ND	1.0	ug/L	SW846 8260B
1,2-Dichloroethane	ND	1,0	ug/L	SW846 8260B
Butanone	ND	10	ug/L	SW846 8260B
_,1,1-Trichloroethane	ND	1.0	ug/L	SW846 8260B
Carbon tetrachloride	ND	1.0	ug/L	SW846 8260B
Bromodichloromethane	ND	1.0	ug/L	SW846 8260B
1,2-Dichloropropane	MD	1.0	ug/L	SW846 8260B
cis-1,3-Dichloropropene	ND	1.0	ug/L	SW846 8260B
Trichloroethene	ND	1.0	ug/L	SW846 8260B
Dibromochloromethane	ND	1.0	ug/L	SW846 8260B
1,1,2-Trichloroethane	ND	1.0	ug/L	SW846 8260B
Benzene	ND	1.0	ug/L	SW846 8260B
trans-1,3-Dichloropropene	ND	1.0	ug/L	SW846 8260B
Bromoform	ND	1.0	ug/L	SW846 8260B
4-Methyl-2-pentanone	ND	10	ug/L	SW846 8260B
2-Hexanone	ND	10	ug/L	SW846 8260B
Tetrachloroethene	ND	1.0	ug/L	SW846 8260B
1,1,2,2-Tetrachloroethane	ND	1.0	ug/L	SW846 8260B
Toluene	ND	1.0	ug/L	SW846 8260B
Chlorobenzene	ND	1.0	ug/L	SW846 8260B
Ethylbenzene	ND	1.0	ug/L	SW846 8260B
Styrene	ND	1.0	ug/L	SW846 8260B
Xylenes (total)	ND	1.0	ug/L	SW846 8260B
	PERCENT	RECOVER	Ž.	
SURROGATE	RECOVERY	LIMITS		
Dibromofluoromethane	97	(73 - 12		
1,2-Dichloroethane-d4	89	(61 - 12		
bluene-d8	105	(76 - 11		
4-Bromofluorobenzene	93	(74 - 11	_6)	

(Continued on next page)

GC/MS Volatiles

Client Lot #...: A2A250196 Work Order #...: ETEL31AA Matrix..... SOLID

MB Lot-Sample #: A2A300000-125

Prep Date....: 01/29/02 Prep Batch #...: 2030125

Analysis Date..: 01/29/02

Dilution Factor: 1

		REPORTI	NG		
PARAMETER	RESULT	LIMIT	UNITS	METHOD	
Benzene	ND	5.0	ug/kg	SW846 8260B	
Ethylbenzene	ND	5.0	ug/kg	SW846 8260B	
Toluene	ND	5.0	ug/kg	SW846 8260B	
Xylenes (total)	ND	10	ug/kg	SW846 8260B	
Methyl tert-butyl ether	ND	20	ug/kg	SW846 8260B	
	סמפרפאת	ים קור אינים פ	v		

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Dibromofluoromethane	99	(59 - 138)
1,2-Dichloroethane-d4	95	(61 - 130)
Toluene-d8	97	(60 - 143)
4-Bromofluorobenzene	94	(47 - 158)

TE(S):

additions are performed before rounding to avoid round-off errors in calculated results.

QUALITY CONTROL SECTION

Client Sample ID: SB-05 12-14

General Chemistry

Lot-Sample #...: A2A250196-008 Work Order #...: ER8EM Matrix..... SO

Date Sampled...: 01/23/02 11:20 Date Received..: 01/25/02

% Moisture....: 8.9

 PARAMETER
 RESULT
 RL
 UNITS
 METHOD
 ANALYSIS DATE
 BATCH #

 Percent Solids
 91.1
 10.0
 %
 MCAWW 160.3 MOD
 01/28-01/29/02
 2028149

Dilution Factor: 1

Client Sample ID: SB-05 12-14

GC Semivolatiles

Lot-Sample #: A2A250196-008 Date Sampled: 01/23/02 11:20			Matrix SO
and the second s	Analysis Date:	02/01/02	•
Prep Batch #: 2031152			
Dilution Factor: 1			
% Moisture: 8.9	Method:	SW846 8015	B
		REPORTING	
PARAMETER	RESULT	LIMIT	UNITS
TPH (as Diesel)	ND	11	mg/kg
	PERCENT	RECOVERY	
SURROGATE	RECOVERY	LIMITS	
C9 (nonane)	27	(10 - 110)	

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

Client Sample ID: SB-05 12-14

GC Volatiles

Lot-Sample #: A2A3 Date Sampled: 01/3 Prep Date: 01/3 Prep Batch #: 2029 Dilution Factor: 1	'23/02 11:20 Date '28/02 Anal y		01/25/02	Matrix: SO
% Moisture: 8.9	Metho	dbo	SW846 8015 J	MOD
PARAMETER TPH (as Gasoline)	RESUI ND	LT I		INITS ug/kg
SURROGATE Trifluorotoluene	PERCE RECOV 32	/ERY I	RECOVERY LIMITS (10 - 150)	
NOTE(S):				

Results and reporting limits have been adjusted for dry weight.

Client Sample ID: SB-05 9-11

General Chemistry

Lot-Sample #...: A2A250196-007 Work Order #...: ER8EH Matrix..... S0

Date Sampled...: 01/23/02 11:00 Date Received..: 01/25/02

% Moisture....: 6.7

					PREPARATION-	PREP
PARAMETER	RESULT	RL	UNITS	METHOD	ANALYSIS DATE	BATCH #
Percent Solids	93.3	10.0	ર્જ	MCAWW 160.3 MOD	01/28-01/29/02	2028149

Dilution Factor: 1

Client Sample ID: SB-05 9-11

GC Semivolatiles

Lot-Sample #: Date Sampled: Prep Date: Prep Batch #: Dilution Factor:	01/23/02 11:00 01/31/02 2031152		01/25/02	Matrix SO
% Moisture:		Method:	SW846 8015	В
PARAMETER	New Article Market Control of the Co	RESULT	REPORTING LIMIT	UNITS
TPH (as Diesel)		ND	11	mg/kg
		PERCENT	RECOVERY	
SURROGATE		RECOVERY	LIMITS	
C9 (nonane)		26	(10 - 110)	
NOTE(S):				

Results and reporting limits have been adjusted for dry weight.

Client Sample ID: SB-05 9-11

GC Volatiles

Lot-Sample #: A2A250196-00 Date Sampled: 01/23/02 11: Prep Date: 01/28/02 Prep Batch #: 2029169 Dilution Factor: 1		01/25/02	Matrix SO
% Moisture: 6.7	Method	SW846 8015	MOD
PARAMETER	RESULT	REPORTING LIMIT	UNITS
TPH (as Gasoline)	ND	110	ug/kg
SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS	
Trifluorotoluene	30 .	(10 - 150)	

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

Client Sample ID: TRIP BLANK

GC/MS Volatiles

Lot-Sample #: A2A250196-006	Work Order #: ER8EG1AA	Matrix: WQ
Date Sampled: 01/25/02	Date Received: 01/25/02	
Prep Date: 01/29/02	Analysis Date: 01/29/02	

Prep Date....: 01/29/02 Prep Batch #...: 2030138

4-Bromofluorobenzene

		REPORTIN	iG
PARAMETER	RESULT	LIMIT	UNI
Chloromethane	ND	1.0	ug/
Bromomethane	ND	1.0	ug/
Vinyl chloride	ND	1.0	ug/:
Chloroethane	ND	1.0	ug/I
Methylene chloride	ND	1.0	ug/L
Acetone	ND	10	ug/L
Carbon disulfide	ND	1.0	ug/L
1,1-Dichloroethene	ND	1.0	ug/L
1,1-Dichloroethane	ND	1.0	ug/L
trans-1,2-Dichloroethene	ND	0.50	ug/L
cis-1,2-Dichloroethene	ND	0.50	ug/L
Chloroform	ND	1.0	ug/L
1,2-Dichloroethane	ND	1.0	ug/L
Butanone	ND	10	ug/L
1,1,1-Trichloroethane	ND	1.0	ug/L
Carbon tetrachloride	ND	1.0	ug/L
Bromodichloromethane	ND	1.0	ug/L
1,2-Dichloropropane	ND	1.0	ug/L
cis-1,3-Dichloropropene	ND	1.0	ug/L
Trichloroethene	ND	1.0	ug/L
Dibromochloromethane	ND	1.0	ug/L
1,1,2-Trichloroethane	ND	1.0	ug/L
Benzene	ND	1.0	ug/L
trans-1,3-Dichloropropene	ND	1.0	ug/L
Bromoform	ND	1.0	ug/L
4-Methyl-2-pentanone	ND	10	ug/L
2-Hexanone	ND	10	ug/L
Tetrachloroethene	ND	1.0	ug/L
1,1,2,2-Tetrachloroethane	ND	1.0	ug/L
Toluene	ND	1.0	ug/L
Chlorobenzene	ND	1.0	ug/L
Ethylbenzene	ND	1.0	ug/L
Styrene	ND	1.0	ug/L
Xylenes (total)	ND	1.0	ug/L
	PERCENT	RECOVERY	
SURROGATE	RECOVERY	LIMITS	WALANTINA and
Dibromofluoromethane	104	(73 - 12	2)
, 2-Dichloroethane-d4	100	(61 - 12	8)
/oluene-d8	105	(76 - 11	0)

94

(74 - 116)

Client Sample ID: TW-05

General Chemistry

Lot-Sample #...: A2A250196-005 Work Order #...: ER8EF
Date Sampled...: 01/25/02 09:45 Date Received..: 01/25/02 Matrix..... WG

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION- ANALYSIS DATE	PREP BATCH #
pH (liquid)	10.1	Dilution Facto	No Units	MCAWW 150.1	01/25/02	2025428
Acidity	ND	10 Dilution Facto	mg/L or: 1	MCAWW 305.1	01/30/02	2030410
Specific Conductance	2500	1 Dilution Facto	umhos/cm	MCAWW 120.1	01/25/02	2025427
Total Cyanide	ND	0.010 Dilution Facto	mg/L x: 1	MCAWW 335.2	01/29/02	2029173

Client Sample ID: TW-05

TOTAL Metals

Lot-Sample #...: A2A250196-005

Date Sampled...: 01/25/02 09:45 Date Received..: 01/25/02

REPORTING PREPARATION-WORK RESULT LIMIT UNITS METHOD ANALYSIS DATE ORDER # Prep Batch #...: 2028106 Zinc SW846 6010B 01/28-01/29/02 ER8EF1AE 0.020 mq/L Dilution Factor: 1 0,025 Copper NDmq/L SW846 6010B 01/28-01/29/02 ER8EF1AC Dilution Factor: 1 Nickel ND 0,040 01/28-01/29/02 ER8EF1AD mg/L SW846 6010B Dilution Factor: 1 ND Arsenic 0.010 mg/L SW846 6010B 01/28-01/29/02 ER8EF1AK Dilution Factor: 1 Barium ND 0.20 mg/L SW846 6010B 01/28-01/29/02 ER8EF1AF Dilution Factor: 1 0.0050 dmium ND mg/LSW846 6010B 01/28-01/29/02 ER8EF1AG Dilution Factor: 1 Lead ND 0.0030 mq/L SW846 6010B 01/28-01/29/02 ER8EF1AL Dilution Factor: 1 Chromium ND 0.010 mg/L SW846 6010B 01/28-01/29/02 ER8EF1AH Dilution Factor: 1 Selenium ND 0.0050 mq/L SW846 6010B 01/28-01/29/02 ER8EF1AM Dilution Factor: 1 Silver ND 0.010 mg/L SW846 6010B 01/28-01/29/02 ER8EF1AJ Dilution Factor: 1 Mercury ND 0.00020 SW846 7470A 01/28/02 mg/L ER8EF1AN

Dilution Factor: 1

Matrix.... WG

Client Sample ID: TW-05

GC/MS Volatiles

Lot-Sample #: A2A250196-005 Date Sampled: 01/25/02 09:45 Prep Date: 01/29/02 Prep Batch #: 2030138	Date Received:	01/25/02	Matrix WG
Dilution Factor: 1	Method:	SW846 8260	В
		REPORTING	
PARAMETER	RESULT	LIMIT	UNITS
Chloromethane	ND	1.0	ug/L
Bromomethane	ND	1.0	ug/L
Vinyl chloride	ND	1.0	ug/L

1.0

1.0

ug/L ug/L

<u> </u>			→ ·	
Chloroethane	ND	1.0	ug/L	
Methylene chloride	ND	1.0	ug/L	
Acetone	ND	10	ug/L	
Carbon disulfide	ND	1.0	ug/L	
1,1-Dichloroethene	ND	1.0	ug/L	
1,1-Dichloroethane	ND	1.0	ug/L	
trans-1,2-Dichloroethene	ND	0.50	ug/L	
cis-1,2-Dichloroethene	ND	0.50	ug/L	
Chloroform	ND	1.0	ug/L	
1,2-Dichloroethane	ND	1.0	ug/L	
}Butanone	ND	10	ug/L	
1,1,1-Trichloroethane	ND	1.0	ug/L	
Carbon tetrachloride	ND	1.0	ug/L	
Bromodichloromethane	ND	1.0	ug/L	
1,2-Dichloropropane	ND	1.0	ug/L	

Dibromochloromethane	ND	1.0	ug/L
1,1,2-Trichloroethane	ND	1.0	ug/L
Benzene	ND	1.0	ug/L
trans-1,3-Dichloropropene	ND	1.0	ug/L
Bromoform	ND	1.0	\mathtt{ug}/\mathtt{L}
4-Methyl-2-pentanone	ND	10	ug/L
2-Hexanone	ND	10	\mathtt{ug}/\mathtt{L}
Tetrachloroethene	1.8	1 0	ug/L
1,1,2,2-Tetrachloroethane	ND	1.0	ug/L
Toluene	ND	1.0	ug/L
Chlorobenzene	ND	1.0	ug/L
Ethylbenzene	ND	1.0	ug/L
Styrene	ND	1.0	ug/L
Xylenes (total)	ND	1.0	ug/L

ND

ND

cis-1,3-Dichloropropene

Trichloroethene

	PERCENT	RECOVERY		
SURROGATE	RECOVERY	LIMITS		
Dibromofluoromethane	99	(73 - 122)		
, 2-Dichloroethane-d4	92	(61 - 128)		
Joluene-d8	103	(76 - 110)		
4-Bromofluorobenzene	97	(74 - 116)		

Client Sample ID: TW-04

General Chemistry

Lot-Sample #...: A2A250196-004 Work Order #...: ER8EE Matrix..... WG

Date Sampled...: 01/25/02 08:45 Date Received..: 01/25/02

PARAMETER	RESULT	RL:	UNITS	METHOD	PREPARATION - ANALYSIS DATE	PREP BATCH #
pH (liquid)	11.3	Dilution Facto	No Units	MCAWW 150.1	01/25/02	2025428
Acidity	ND	10 Dilution Facto	mg/L r: 1	MCAWW 305.1	01/30/02	2030410
Specific Conductance		l. Dilution Facto	umhos/cm r: 1	MCAWW 120.1	01/25/02	2025427
Total Cyanide	ND	0.010 Dilution Facto	mg/L r: 1	MCAWW 335.2	01/29/02	2029173

Client Sample ID: TW-04

TOTAL Metals

Lot-Sample #...: A2A250196-004
Date Sampled...: 01/25/02 08:45 Date Received..: 01/25/02 Matrix....: WG

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHO	D	PREPARATION - ANALYSIS DATE	WORK ORDER #
Prep Batch #	.: 2028106						
Copper	ND	0.025 Dilution Facto	mg/L or: 1	SW846	6010B	01/28-01/29/02	ER8EE1AC
Nickel	ND	0.040 Dilution Facto	mg/L or: 1	SW846	6010B	01/28-01/29/02	ER8EE1AD
Zinc	ND	0.020 Dilution Facto	mg/L or: 1	SW846	6010B	01/28-01/29/02	ER8EE1AE
Arsenic	ND	0.010 Dilution Facto	mg/L r: 1	SW846	6010B	01/28-01/29/02	ER8EE1AK
Barium	ND	0.20 Dilution Facto	mg/L r: 1	SW846	6010B	01/28-01/29/02	ER8EE1AF
dmium .	ND	0.0050 Dilution Facto	mg/L r: 1	SW846	6010B	01/28-01/29/02	ER8EE1AG
Lead	ND	0.0030 Dilution Facto	mg/L r: 1	SW846	6010B	01/28-01/29/02	ERSEELAL
Chromium	ND	0.010 Dilution Facto	mg/L r: 1	SW846	6010B	01/28-01/29/02	ER8EE1AH
Selenium	0.0059	0.0050 Dilution Facto	mg/L r: 1	SW846	6010B	01/28-01/29/02	ER8EE1AM
Silver	ND	0.010 Dilution Facto	mg/L r: 1	SW846	6010B	01/28-01/29/02	ER8EE1AJ
Mercury	ND	0.00020 Dilution Factor	mg/L r: 1	SW846	7470A	01/28/02	ER8EE1AN

Client Sample ID: TW-04

GC/MS Volatiles

Lot-Sample #...: A2A250196-004 Work Order #...: ER8EE1AA Matrix.... WG

Date Sampled...: 01/25/02 08:45 Date Received..: 01/25/02 Analysis Date..: 01/29/02 Prep Date....: 01/29/02

Prep Batch #...: 2030138

4-Bromofluorobenzene

Dilution Factor: 1	Method	: SW846 8260)B
		REPORTING	
PARAMETER	RESULT	LIMIT	UNITS
Chloromethane	ND	1.0	ug/L
Bromomethane	ND	1.0	ug/L
Vinyl chloride	ND	1.0	ug/L
Chloroethane	ND	1.0	ug/L
Methylene chloride	ND	1.0	ug/L
Acetone	ND	10	ug/L
Carbon disulfide	ND	1.0	ug/L
1,1-Dichloroethene	ND	1.0	ug/L
1,1-Dichloroethane	ND	1.0	ug/L
trans-1,2-Dichloroethene	ND	0.50	ug/L
cis-1,2-Dichloroethene	0.51	0.50	ug/L
Chloroform	ND	1.0	ug/L
1,2-Dichloroethane	ND	1.0	ug/L
-Butanone	ND	10	ug/L
1,1,1-Trichloroethane	ND	1.0	ug/L
Carbon tetrachloride	ND	1.0	ug/L
Bromodichloromethane	ИD	1.0	ug/L
1,2-Dichloropropane	ND	1.0	ug/L
cis-1,3-Dichloropropene	ND	1.0	ug/L
Trichloroethene	1.5	1.0	ug/L
Dibromochloromethane	ND	1.0	ug/L
1,1,2-Trichloroethane	ND	1.0	ug/L
Benzene	ND	1.0	ug/L
trans-1,3-Dichloropropene	ND	1.0	ug/L
Bromoform	ND	1.0	ug/L
4-Methyl-2-pentanone	ND	10	ug/L
2-Hexanone	ND	10	ug/L
Tetrachloroethene	2.2	1.0	ug/L
1,1,2,2-Tetrachloroethane	ND	1.0	ug/L
Toluene	ND	1.0	ug/L
Chlorobenzene	ND	1.0	ug/L
Ethylbenzene	ND	1.0	ug/L
Styrene	ND	1.0	ug/L
Xylenes (total)	ND	1.0	ug/L
	PERCENT	RECOVERY	
SURROGATE	RECOVERY	LIMITS	,
Dibromofluoromethane	97	(73 - 122)	
1,2-Dichloroethane-d4	92	(61 - 128)	
/toluene-d8	102	(76 - 110)	

97

(74 - 116)

Client Sample ID: TW-01

General Chemistry

Lot-Sample #...: A2A250196-003 Work Order #...: ER8D6 Matrix.....: WG
Date Sampled...: 01/25/02 08:00 Date Received..: 01/25/02

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION- ANALYSIS DATE	PREP BATCH #
pH (liquid)	7.7	Dilution Facto	No Units	MCAWW 150.1	01/25/02	2025428
Acidity	ИD	10 Dilution Facto	mg/L pr: 1	MCAWW 305.1	01/30/02	2030410
Specific Conductance		1 Dilution Facto	umhos/cm	MCAWW 120.1	01/25/02	2025427
Total Cyanide	ND	0.010	mg/L	MCAWW 335.2	01/28/02	2028173

Client Sample ID: TW-01

TOTAL Metals

Lot-Sample #...: A2A250196-003
Date Sampled...: 01/25/02 08:00 Date Received..: 01/25/02

Matrix....: WG

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION - ANALYSIS DATE	WORK ORDER #
Prep Batch #	.: 2028106					
Copper	ND	0.025 Dilution Factor	•	SW846 6010B	01/28-01/29/02	ER8D61AC
Nickel	ND	0.040 Dilution Factor	mg/L c: i	SW846 6010B	01/28-01/29/02	ER8D61AD
Zinc	ND	0.020 Dilution Factor	mg/L c: 1	SW846 6010B	01/28-01/29/02	ER8D61AE
Arsenic	ND	0.010 Dilution Factor	mg/L	SW846 6010B	01/28-01/29/02	ER8D61AK
Barium	ND	0.20 Dilution Factor	mg/L c: 1	SW846 6010B	01/28-01/29/02	ER8D61AF
]mium	ND	0.0050 Dilution Factor	mg/L	SW846 6010B	01/28-01/29/02	ER8D61AG
Lead	ND	0.0030 Dilution Factor	mg/L	SW846 6010B	01/28-01/29/02	ER8D61AL
Chromium	ND	0.010 Dilution Factor	mg/L	SW846 6010B	01/28-01/29/02	ER8D61AH
Selenium	ND	0.0050 Dilution Factor	mg/L	SW846 6010B	01/28-01/29/02	ER8D61AM
Silver	ND	0.010 Dilution Factor	mg/L	SW846 6010B	01/28-01/29/02	ER8D61AJ
Mercury	ND	0.00020 Dilution Factor	mg/L :: 1	SW846 7470A	01/28/02	ER8D61AN

Client Sample ID: TW-01

GC/MS Volatiles

Lot-Sample #...: A2A250196-003 Work Order #...: ER8D61AA Matrix..... WG

Date Sampled...: 01/25/02 08:00 Date Received..: 01/25/02 Prep Date....: 01/29/02 Analysis Date..: 01/29/02

Prep Batch #...: 2030138

4-Bromofluorobenzene

Dilution Factor: 1	Method	: SW846 826	0B
		REPORTING	
PARAMETER	RESULT	LIMIT	UNITS
Chloromethane	ND	1.0	ug/L
Bromomethane	ND	1.0	ug/L
Vinyl chloride	ИD	1.0	uq/L
Chloroethane	ND	1.0	ug/L
Methylene chloride	ND	1.0	ug/L
Acetone	ND	10	ug/L
Carbon disulfide	ND	1.0	ug/L
1,1-Dichloroethene	ND	1.0	ug/L
1,1-Dichloroethane	ND	1.0	ug/L
trans-1,2-Dichloroethene	ND	0.50	ug/L
cis-1,2-Dichloroethene	ND	0.50	ug/L
Chloroform	ND	1.0	ug/L
1,2-Dichloroethane	ND	1.0	ug/L
Butanone	ND	10	ug/L
1,1,1-Trichloroethane	ND	1.0	ug/L
Carbon tetrachloride	ND	1.0	ug/L
Bromodichloromethane	ND	1.0	ug/L
1,2-Dichloropropane	ND	1.0	ug/L
cis-1,3-Dichloropropene	ND	1.0	ug/L
Trichloroethene	ND	1.0	uq/L
Dibromochloromethane	ND	1.0	ug/L
1,1,2-Trichloroethane	ND	1.0	ug/L
Benzene	ND	1.0	ug/L
trans-1,3-Dichloropropene	ND	1.0	ug/L
Bromoform	ND	1.0	ug/L
4-Methyl-2-pentanone	ИD	10	ug/L
2-Hexanone	ND	10	ug/L
Tetrachloroethene	ND	1.0	uq/L
1,1,2,2-Tetrachloroethane	ND	1.0	ug/L
Toluene	ND	1.0	ug/L
Chlorobenzene	ND	1.0	uq/L
Ethylbenzene	ND	1.0	ug/L
Styrene	ND	1.0	ug/L
Xylenes (total)	ND	1.0	ug/L
	PERCENT	RECOVERY	
SURROGATE	RECOVERY	LIMITS	
Dibromofluoromethane	100	(73 - 122)	
.,2-Dichloroethane-d4	93	(61 - 128)	
bluene-d8	107	(76 - 110)	

96

(74 - 116)

Client Sample ID: SB-06 11-13

General Chemistry

Lot-Sample #...: A2A250196-002 Work Order #...: ER8D5 Matrix.....: S0

Date Sampled...: 01/24/02 14:40 Date Received..: 01/25/02

% Moisture....: 8.9

 PARAMETER
 RESULT
 RL
 UNITS
 METHOD
 ANALYSIS
 DATE
 BATCH #

 Percent Solids
 91.1
 10.0
 %
 MCAWW 160.3 MOD
 01/28-01/29/02
 2028149

Dilution Factor: 1

Client Sample ID: SB-06 11-13

GC Semivolatiles

Lot-Sample #: A2A250196-002 Date Sampled: 01/24/02 14:40 Prep Date: 01/31/02 Prep Batch #: 2031152 Dilution Factor: 2		01/25/02	Matrix SO
% Moisture: 8.9	Method:	SW846 8015	В
PARAMETER	RESULT	REPORTING LIMIT	UNITS
TPH (as Diesel)	77	22	mg/kg
SURROGATE C9 (nonane)	PERCENT RECOVERY 21	RECOVERY LIMITS (10 - 110)	

Results and reporting limits have been adjusted for dry weight.

NOTE(S):

Client Sample ID: SB-06 11-13

GC Volatiles

Lot-Sample #: A2A2501 Date Sampled: 01/24/0 Prep Date: 01/28/0	2 14:40 Date Received:	01/25/02	Matrix: SO
Prep Batch #: 2029169 Dilution Factor: 1			
% Moisture: 8.9	Method:	SW846 8015	MOD
		REPORTING	
PARAMETER	RESULT	LIMIT	UNITS
TPH (as Gasoline)	ND	110	ug/kg
-	PERCENT	RECOVERY	
SURROGATE	RECOVERY	LIMITS	
Trifluorotoluene	28	(10 - 150)	
NOTE(S):			

Results and reporting limits have been adjusted for dry weight.

Client Sample ID: SB-06 11-13

GC/MS Volatiles

Lot-Sample #: A2A250196-002 Date Sampled: 01/24/02 14:40 Prep Date: 01/29/02 Prep Batch #: 2030125 Dilution Factor: 1.06	· · · · · · · · · · · · · · · · · · ·	01/25/02	Matrix SO
% Moisture: 8.9	Method:	SW846 8260	В
		REPORTING	
PARAMETER	RESULT	LIMIT	UNITS
Benzene	ND	5.8	ug/kg
Ethylbenzene	ND	5.8	ug/kg
Methyl tert-butyl ether	ND	23	ug/kg
Toluene	ND	5.8	ug/kg
Xylenes (total)	ND	12	ug/kg
	PERCENT	RECOVERY	
SURROGATE	RECOVERY	LIMITS	
Dibromofluoromethane	99	(59 - 138)	
1,2-Dichloroethane-d4	94	(61 - 130)	•
Toluene-d8	106	(60 - 143)	
4-Bromofluorobenzene) .OTE(S):	85	(47 - 158)	

Results and reporting limits have been adjusted for dry weight.

Client Sample ID: SB-06 9-11

General Chemistry

Lot-Sample #...: A2A250196-001 Work Order #...: ER8D3 Matrix.....: S0

Date Sampled...: 01/24/02 14:20 Date Received..: 01/25/02

% Moisture....: 11

 PARAMETER
 RESULT
 RL
 UNITS
 METHOD
 ANALYSIS DATE
 BATCH #

 Percent Solids
 89.4
 10.0
 \$\$^*\$
 MCAWW 160.3 MOD
 01/28-01/29/02
 2028149

Dilution Factor: 1

Client Sample ID: SB-06 9-11

GC Semivolatiles

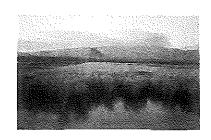
Lot-Sample #:	A2A250196-001	Work Order #:	ER8D32AC	Matrix: SO
Date Sampled:	01/24/02 14:20	Date Received:	01/25/02	
Prep Date:	01/31/02	Analysis Date:	02/01/02	
Prep Batch #:	2031152			
Dilution Factor:	10			
% Moisture:	11	Method:	SW846 8015	В
			REPORTING	
PARAMETER		RESULT	LIMIT	UNITS
TPH (as Diesel)		110	110	mg/kg
		PERCENT	RECOVERY	
SURROGATE		RECOVERY	LIMITS	
C9 (nonane)		19 DIL	(10 - 110)	

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

DIL The concentration is estimated or not reported due to dilution or the presence of interfering analytes.

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Due Diligence Assistance and Phase I/II Site Assessment Activities

American Steel and Wire Facility 4300 East 49th Street Cuyahoga Heights, Ohio 44125

Prepared For Charter Steel Company Saukville, Wisconsin

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Volume I of II

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Section 6 Focused Phase II Investigation

6.1 Objectives and Phase II Overview

The focused Phase II investigation of the ASW facility in Cuyahoga Heights, Ohio, was conducted by RMT between January 22 and January 25, 2002. The objectives of the focused Phase II activities were:

- To confirm or deny the potential for significant liability associated with specific areas of the site that were identified after a site walkover and review of technical information during a Phase I Environmental Review and then discussed with and approved by representatives of Birmingham Steel.
- To compare the sampling and analytical results to applicable Ohio Voluntary Action Program (VAP) requirements and assess the potential impact on site related environmental liabilities.

The scope of the limited Phase II investigation was limited to those potentially significant environmental liabilities that may have occurred subsequent to ASW's purchase of the property from U.S. Steel in 1986. The investigation did not include any of the property previously owned by ASW that is now owned by Gibralter Strip Steel Corporation, ALCOA, or MetroParks. The planned objectives, sampling locations, and analyses for the Phase II investigation are shown in Table 1.

6.2 Investigation Program and Analytical Procedures

David Kreeger, geologist with RMT, provided technical oversight and collected all samples associated with this investigation. H.A.D. Inc. (H.A.D.) advanced the soil borings and obtained samples using a Geoprobe 5400 (direct-push technology) at all locations except for TW-01, TW-04, TW-05, and SB-06 where drilling refusal was encountered. Borings and temporary well installation at these locations were advanced by H.A.D. using a CME 85 and hollow-stem auger techniques. Ray Smith from Birmingham Steel Corporation provided field coordination.

A total of six soil borings and five temporary wells were completed. A stainless steel sampling barrel, containing a disposable acetate liner was used to collect all soil samples except for SB-06. The core barrel was 2 inches in diameter and 4 feet long. Soil samples were continuously collected at 4-foot intervals, logged, and analyzed with a photo-ionization detector (PID) for the presence of organic vapors. At SB-06, soil samples were collected using a stainless-steel split spoon. Split spoon sampling was done in general accordance with ASTM-D1586 standard

procedures. Boring logs for each sampling location are included in Appendix C. Boring locations are shown on Figure 3.

Temporary wells were installed using 1-inch PVC (TW-02 and TW-03) or 2-inch PVC (TW-01, TW-04, and TW-05). All wells had 10-foot screens at the bottom of each well that were placed to straddle the first observed zone of saturation. The depths of screened intervals are shown in Table 2. The 1-inch wells were allowed to naturally collapse around the screens. Sand-pack was placed adjacent to the 2-inch well screens and a bentonite seal was placed above the sand pack material. All wells were developed to low turbidity by bailing and peristaltic pumping. All wells were allowed to rest overnight before purging and sampling with a peristaltic pump.

A summary of drilling methods, boring depths, sample depths and analytical parameters is shown in Table 2. All samples were submitted under chain-of—custody to Severn Trent Laboratories for analysis using Ohio VAP-certified methods and protocols. Split samples were provided to Ray Smith. Each sample was collected using new disposable latex gloves and immediately placed in an ice-filled container and transported via courier to Severn Trent Laboratories in North Canton, Ohio.

Prior to completing each boring, all sampling equipment and push rods were decontaminated by washing and allowed to air dry. Geoprobe equipment was washed using an Alconox solution. Auger equipment was washed using a high pressure, hot water cleaner. Decontamination fluids, well development fluids and purge water was containerized in buckets for disposal by Birmingham Steel Corporation. All excess soils were placed in four 55-gallon drums that were left on site for disposal by Birmingham Steel Corporation. All additional waste, (personal protective equipment, paper towels, and acetate liners) was double-bagged and disposed on site in the municipal dumpster. Upon completion, each boring was backfilled with bentonite chips and properly hydrated to seal the annulus. The temporary wells were left in place to be abandoned after the results were reviewed and final information evaluated.

6.3 Results of the Investigations

6.3.1 Regional Geology

As discussed earlier, the regional geology of Cuyahoga County consists of unconsolidated surficial deposits of primarily glacial origin overlying Ohio Shale of Devonian age. The surficial deposits are composed of undifferentiated silt and clay and are lacustrine in origin (Ford, 1987). These deposits are interbedded with sand and gravel in terraces along the Cuyahoga River valley. However, the uplands of Cuyahoga Heights are primarily composed of man-made surfaces (i.e., reclaimed land, cut and fill,

dumps, concrete, asphalt, and buildings). This includes the bluff located on the subject property which has been used as a fill area for various wastes including slag, mill waste, mill scale, foundry sand, and general plant refuse.

6.3.2 Regional Groundwater Occurrence and Flow

The depth to groundwater varies depending on the local hydrogeology and topography. Based on previous subsurface investigative activities, the depth to groundwater ranges from approximately 20 feet bgs in the southern part of the property (adjacent to the river) and greater than 75 bgs on the northern part (bluff). The regional movement of groundwater for the area is toward the Cuyahoga River adjacent to the southern property boundary of the site. Cuyahoga Heights relies on the Cleveland Division of Water for potable water that is supplied from Lake Erie.

6.3.3 Site Geology

Site-specific geology was interpreted from several previous reports and from the 11 soil borings advanced by RMT in January 2002 (SB-01 through SB-06 and TW-01 through TW-05).

The bluff of the site is covered with asphalt, concrete, or buildings. RMT advanced six soil borings (SB-01 through SB-06) on the bluff during the recent investigation by RMT with the deepest boring advanced being 16 feet bgs. Fill material was encountered throughout each of the six soil borings with the consisting of sand, silt, gravel, and slag debris. The depth of the fill is unknown, however, based on previous investigations, the depth of the fill present under the asphalt, concrete, or buildings is at least 50 feet bgs.

RMT advanced five additional soil borings on the low-lying area adjacent to the Cuyahoga River (TW-01 through TW-05). The depths of the soil borings ranged from 25 to 29 feet bgs with native material being predominant in soil borings TW-1 and TW-2. In general, the native soils consisted of interbedded silt, silty-clay, and sand. Soil borings TW-3 through TW-5 were generally composed of fill material including sand, gravel, and slag debris. Native material was observed at depths of 27 feet bgs (TW-3) and 22 feet bgs (TW-4). Fill was observed throughout soil boring TW-5 to a boring termination depth of 29 feet bgs.

6.3.4 Site Hydrogeology

During the recent site investigation, five of the soil borings were completed as temporary monitoring wells (TW-1 through TW-5) on the low-lying area of the site. The locations of the wells are illustrated on Figure 3. The intent of the monitoring wells was

to collect groundwater samples to define downgradient groundwater quality at the site. Water levels were measured at each temporary well prior to sampling with depths ranging from approximately 17 to 21 feet bgs. However, since the wells were temporary and the water levels did not reach equilibrium, groundwater flow directions and hydraulic gradients were not specifically determined. Based on information from previous investigations, the horizontal groundwater system at the facility appears to have a south-southwesterly flow direction.

6.3.5 Chemical Results

The analytical results for detected parameters are summarized on Tables 3 and 4. Detailed analytical report forms are included in Appendix D. Overall, many of the soil samples contained detected levels of constituents of concern that exceeded the respective laboratory quantitation limits; however, none of the samples were reported to have any hazardous constituent above the Ohio VAP Generic Direct Contact Industrial Standards. Furthermore, none of the collected groundwater samples contained constituents that exceeded Ohio VAP potable use standards (also know as Maximum Contaminant Levels (MCLs)).

Poly-chlorinated Biphenyls (PCBs) from Transformers

In order to assess the potential for PCB contamination from historic transformer use on the site, stained soils near transformers owned by ASW were sampled and analyzed. Based upon site observations, the soils near the transformers located between the Gibralter Strip Steel building and the ASW wire drawing operation were sampled. These soil samples from locations SB 01 and SB 02, were analyzed for PCBs. Total Petroleum Hydrocarbons (TPH) as diesel and TPH as gasoline and the results are summarized in Table 3. PCB Aroclor 1260 was reported in the 0-0.5 foot samples at 71 μ g/kg and 64 μ g/kg in SB-01 and SB-02, respectively. No detectable PCBs were reported in the 1.5 to 2.0 foot samples. TPH as diesel was reported in all four samples at concentrations ranging from 49 to 220 mg/kg. No detectable TPH as gasoline was reported. These parameters are all below the Ohio VAP regulated concentrations by almost an order of magnitude or more. In addition, the vertical extent of impacts is also limited since the detected concentration of both PCBs and TPH declined consistently with depth.

Historic Oil Spill Area

Soil samples were also collected from the area of a reported historic oil spill southwest of the Gibralter Strip Steel building. Two samples each from SB 03 and SB 04 were analyzed for TPH as diesel, and TPH as gasoline (see Table 3 for a summary of the results). TPH as diesel was reported in all four samples at concentrations ranging from 26 to 180 mg/kg. No detectable TPH as gasoline was reported. These results are also below the Ohio VAP regulated concentrations.

Former Gasoline Underground Storage tank

Two soil borings (SB 05 and SB 06) were advanced in the area close to a former gasoline underground storage tank. The borings were advanced to depths of 12 to 14 feet bgs. Two samples from each soil boring were selected for analyses of benzene, ethylbenzene, toluene, xylenes and MTBE (methyl tert-butyl ether), TPH as diesel, and TPH as gasoline. As presented on Table 3, no detectable analytes were reported except for TPH as diesel at 110 mg/kg and 77 mg/kg in SB-06 9 to 11 foot and 11 to 13 foot samples, respectively. These concentrations are also below Ohio VAP regulated levels.

Down-gradient Groundwater Quality

Five temporary groundwater monitoring wells were installed near the southern property boundary to assess groundwater quality at locations expected to be down-gradient of the facility. The five groundwater samples were analyzed for 11 metals, VOCs, total cyanide, specific conductance and pH.

As can be seen on Table 4, there were only a limited number of detected parameters in the five groundwater samples and those detected concentrations were below the Ohio based MCLs where they exist. Using the MCLs as standards is a conservative comparison criteria since the shallow groundwater is not used as a potable drinking water source on site or in the Cleveland city area. The presence of these constituents at detectable concentration levels does indicate however, that there are areas of soil contamination at some locations that have impacted groundwater. However, since the monitoring well locations are at least hundreds of feet down-gradient of the most likely sources (i.e., the former perchloroethylene above ground tank), it appears that these constituents are being effectively remediated before they reach the property line by the natural attenuative conditions at the site. Although there are no specific groundwater standards for pH, the elevated pH is further evidence that

site activities have impacted the groundwater quality. It is important to realize that industrial fill is saturated at monitoring wells TW 04 and TW 05 and therefore the elevated pH may be associated with alkalinity leached from the fill materials.

What procedures were used for analysis?

Table 1 Phase II Sampling Plan ASW Cuyohaga Heights, Ohio

	Inves	tigation Program	Analytical Program			
Objective and Sample Locations	Number Depth		Soil Samples	Groundwater		
Define downgradient groundwater quality. Place wells on southern property boundary as much as possible, near the access road.	4 to 6 water table wells	20 to 30 feet bgs	N/A	RCRA Metals + Zn, Ni, Cu; VOCs; pH; acidity; CN; conductivity		
Determine possible presence of polychlorinated biphenyls (PCBs) in soils above action levels. Locate samples near Gibralter/ASW transformers and near two other areas where large ASW transformers are located or staining is present.	2 locations (4 samples)	0 to 2 feet bgs (analyze at 0 to 0.5 foot and 1.5 to 2.0 foot intervals)	PCBs and TPH on each sample	N/A		
Determine impacts of observed oil spill southwest of Gibralter operations, as described by ERM in correspondence dated May 10, 1990.	2 borings (4 samples)	4 feet bgs (analyze two samples at 0 to 0.5 feet bgs and two samples at either 2 to 4 feet bgs or 4 to 6 feet bgs)	TPH with PCBs on hold	N/A		
Establish if there are residual impacts from former gasoline UST near Boiler House (based upon correspondence by Water and Air Research, Inc. dated December 27, 1989).	2 borings (2 samples)	10 to 15 feet bgs (analyze at suspected invert location and one sample below)	BTEX, hexane, MTBE and TPH	N/A		

Notes:

N/A means not applicable

- 1. Wells are temporary one-inch nominal diameter wells installed and sampled. Abandonment after groundwater results are received.
- 2. Metals analyses include analyses for eight RCRA metals, copper, nickel and zinc.
- 3. Analytical Methods: SW 846 PCBs Method 8082; TPH as diesel Method 8015B and TPH as gasoline Method 8015MOD; VOCs Method 8260B; Metals Methods 6010B and 7470A(Hg); and MCAWW -Cyanide Method 335.2.
- 4. All soil sample intervals are approximate and subject to change depending upon field observations.

Table 2 Limited Phase II Investigation Sample Summary

Location	Boring Depth (feet)	Installation Method	Sample Matrix	Sample/Screen Depth (feet)	Analysis
SB-01	2.0	Direct Push	Soil	0 to 0.5 1.5 to 2.0	TPH, PCBs
SB-02	2.0	Direct Push	Soil	0 to 0.5 1.5 to 2.0	TPH, PCBs
SB-03	4.0	Direct Push	Soil	0 to 0.5 2.0 to 4.0	TPH, Hold for PCBs
SB-04	4.0	Direct Push	Soil	0 to 0.5 2.0 to 4.0	TPH, Hold for PCBs
SB-05	16.0	Direct Push	Soil	9.0 to 11.0 12.0 to 14.0	втех, трн, мтве
SB-06	15.0	Direct Push Hollow Stem Auger	Soil	9.0 to 11.0 11.0 to 13.0	BTEX, TPH, MTBE
TW-01	29.0	Hollow Stem Auger	Groundwater	19.0 to 29.0	VOCs, TPH, Metals, pH, Specific Conductivity, Acidity
TW-02	28.0	Direct Push	Groundwater	14.0 to 24.0	VOCs, TPH, Metals, pH, Specific Conductivity, Acidity
TW-03	28.0	Direct Push	Groundwater	14.0 to 24.0	VOCs, TPH, Metals, pH, Specific Conductivity, Acidity
TW-04	25.0	Hollow Stem Auger	Groundwater	15.0 to 25.0	VOCs, TPH, Metals, pH, Specific Conductivity, Acidity
TW-05	29.0	Hollow Stem Auger	Groundwater	19.0 to 29.0	VOCs, TPH, Metals, pH, Specific Conductivity, Acidity

Table 3
Summary of Soil Analytical Data
Charter Steel - Cuyahoga Heights, Ohio

			Polychlorinated Biphenyls (µg/kg)	TPH as Diesel (mg/kg)	TPH as Gasoline (mg/kg)	Total PVOCs (mg/kg)	
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Soil Sample	Date Collected	Approximate Depth					
SB-01	1/23/2002	0-0.5′	71	220	<110	NA	
		1.5-2.0′	<37	49	<110	NA	
SB-02	1/23/2002	0-0.5′	64	190	<110	NA	
		1.5-2.0′	<37	69	69 <120		
SB-03	1/23/2002	0-0.5′	NA	26	<110	NA	
		2-4′	NA	30	<120	NA	
SB-04	1/23/2002	0-0.5′	NA	140	<110	NA	
		2-4′	NA	180	<130	NA	
SB-05	1/23/2002	9-11′	NA	NA	NA	ND	
		12-14′	ŃΑ	NA	NA	ND	
SB-06	1/24/2002	9-11′	NA	140	<110	ND	
		11-13′	NA	91	<110	ND	

NOTES:

Standards are from Ohio EPA's VAP Generic Direct-Contact Standards (Tables I, IV, and V) and are for comparison purposes only

mg/kg = milligrams per kilogram

μg/kg = micrograms per kilogram

NA = Not Analyzed

ND = Not Detected

PVOCs = Petroleum Volatile Organic Compounds

TPH = Total Petroleum Hydrocarbons

VAP = Voluntary Action Program

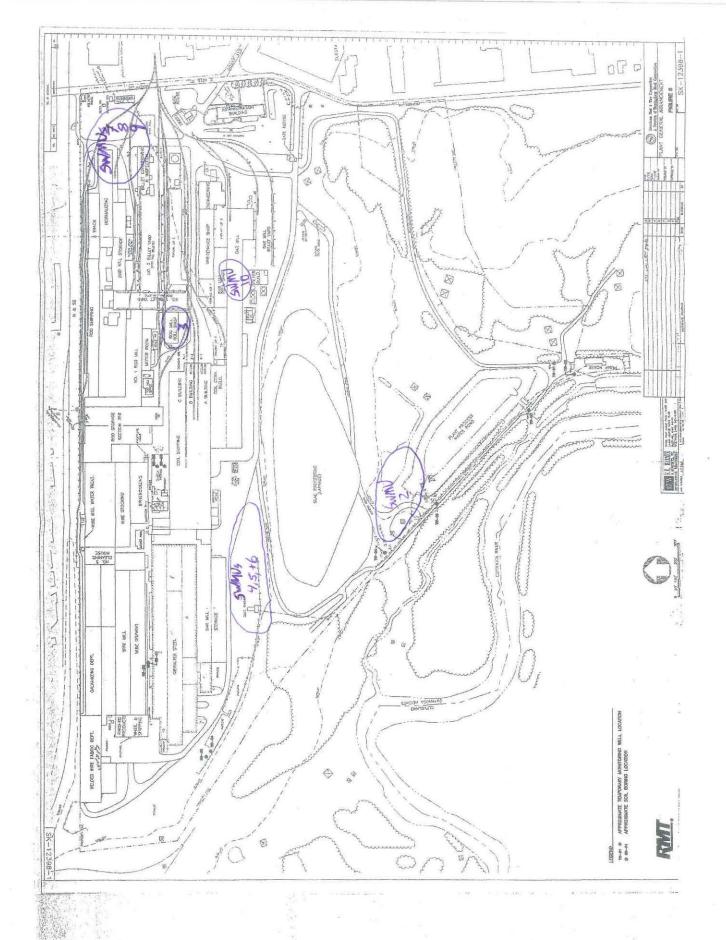


Table 4
Summary of Groundwater Analytical Data
Charter Steel - Cuyahoga Heights, Ohio

		Selenium (mg/L)	Zinc (mg/L)	cis-1,2- Dichloroethene (µg/L)	Trichloroethene (µg/L)	Tetrachloroethene (µg/L)	Acidity (mg/L)	Total Cyanide (mg/L)	Specific Conductance (µmhos/cm)	pH
Ohio EPA VAP MCL Standards		0.05	5	70	5	5	. NE	0.2	NE	NE
Groundwater Sample	Date Collected									
TW-1	1/25/2002	<0.0050	<0.020	<0.50	<1.0	<1.0	<10	<0.010	1,400	7.7
TW-2	1/23/2002	<0.0050	0.060 J, L	<0.50	<1.0	<1.0	<10	<0.010	220	7.4
TW-3	1/23/2002	<0.0050	<0.020	<0.50	<1.0	<1.0	<10	< 0.010	2,500	7.8
TW-4	1/25/2002	0.0059	<0.020	0.51	1.5	2.2	<10	<0.010	3,100	11.3
TW-5	1/25/2002	<0.0050	<0.020	<0.50	<1.0	1.8	<10	<0.010	2,500	10.1

NOTES:

Of the metal and VOC compounds analyzed for, only those reported in at least one sample are presented in this table.

mg/L = milligrams per liter

µg/L = micrograms per liter

MCL = Maximum Contaminant Level

NE = MCLs Not Established

J = Method blank contamination

L = Physical and chemical interferences present

VAP = Voluntary Action Program

Appendix C Boring Logs

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Appendix D Analytical Data Sheets

Appendix D Analytical Data Sheets



STL North Canton 4101 Shuffel Drive NW North Canton, OH 44720-6961

Tel: 330 497 9396 Fax: 330 497 0772 www.stl-inc.com

ANALYTICAL REPORT

PROJECT NO. 5891.01

CHARTER STEEL

Lot #: A2A250196

Dave Misky

RMT Inc 150 N Patrick Blvd Suite 180 Brookfield, WI 53045-5854

SEVERN TRENT LABORATORIES, INC.

Kenneth J. Kuzior Project Manager

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February 5, 2002

CASE NARRATIVE

A2A250196

The following report contains the analytical results for three water samples, four solid samples, and one quality control sample submitted to STL North Canton by RMT from the Charter Steel Site, project number 5891.01. The samples were received on January 25, 2002, according to documented sample acceptance procedures and were analyzed in accordance with Ohio Voluntary Action Program protocols (Lab Certification CL0024).

Acidity analyses were performed at STL Denver.

STL utilizes USEPA approved methods in all analytical work. The samples presented in this report were analyzed for the parameters listed on the analytical methods summary page in accordance with the methods indicated. Preliminary results were provided to Joel Hunt and Dave Misky on January 30 and 31, 2001. A summary of QC data for these analyses is included at the rear of the report.

The results included in this report have been reviewed for compliance with the laboratory QA/QC plan. All data have been found to be compliant with laboratory protocol.

SUPPLEMENTAL QC INFORMATION

GC/MS VOLATILES

The internal standard areas were outside acceptance limits for sample SB-06 9-11 due to matrix effects.

GC VOLATILES

An LCS/LCSD was provided for batch 2029169 since there was insufficient sample volume to perform an MS/MSD.

QUALITY CONTROL ELEMENTS OF SW-846 METHODS

STL North Canton conducts a quality assurance/quality control (QA/QC) program designed to provide scientifically valid and legally defensible data. Toward this end, several types of quality control indicators are incorporated into the QA/QC program, which is described in detail in QA Policy, QA-003. These indicators are introduced into the sample testing process to provide a mechanism for the assessment of the analytical data.

QC BATCH

Environmental samples are taken through the testing process in groups called QUALITY CONTROL BATCHES (QC batches). A QC batch contains up to twenty environmental samples of a similar matrix (water, soil) that are processed using the same reagents and standards. STL North Canton requires that each environmental sample be associated with a QC batch.

Several quality control samples are included in each QC batch and are processed identically to the twenty environmental samples. These QC samples include a METHOD BLANK (MB), a LABORATORY CONTROL SAMPLE (LCS) and, where appropriate, a MATRIX SPIKE/MATRIX SPIKE DUPLICATE (MS/MSD) pair or a MATRIX SPIKE/SAMPLE DUPLICATE (MS/DU) pair. If there is insufficient sample to perform an MS/MSD or an MS/DU, then a LABORATORY CONTROL SAMPLE DUPLICATE (LCSD) is included in the QC batch.

LABORATORY CONTROL SAMPLE

The Laboratory Control Sample is a QC sample that is created by adding known concentrations of a full or partial set of target analytes to a matrix similar to that of the environmental samples in the QC batch. The LCS analyte recovery results are used to monitor the analytical process and provide evidence that the laboratory is performing the method within acceptable guidelines. All control analytes indicated by a bold type in the LCS must meet acceptance criteria. Failure to meet the established recovery guidelines requires the repreparation and reanalysis of all samples in the QC batch. The only exception is that if the LCS recoveries are biased high and the associated sample is ND (non-detected) for the parameter(s) of interest, the batch is acceptable.

At times, a Laboratory Control Sample Duplicate (LCSD) is also included in the QC batch. An LCSD is a QC sample that is created and handled identically to the LCS. Analyte recovery data from the LCSD is assessed in the same way as that of the LCS. The LCSD recoveries, together with the LCS recoveries, are used to determine the reproducibility (precision) of the analytical system. Precision data are expressed as relative percent differences (RPDs). If the RPD fails for an LCS/LCSD and yet the recoveries are within acceptance criteria, the batch is still acceptable.

METHOD BLANK

The Method Blank is a QC sample consisting of all the reagents used in analyzing the environmental samples contained in the QC batch. Method Blank results are used to determine if interference or contamination in the analytical system could lead to the reporting of false positive data or elevated analyte concentrations. All target analytes must be below the reporting limits (RL) or the associated sample(s) must be ND except under the following circumstances:

Common organic contaminants may be present at concentrations up to 5 times the reporting limits. Common metals
contaminants may be present at concentrations up to 2 times the reporting limit, or the reported blank concentration
must be twenty fold less than the concentration reported in the associated environmental samples. (See common
laboratory contaminants listed below.)

Volatile (GC or GC/MS)	Semivolatile (GC/MS)	Metals
Methylene chloride	Phthalate Esters	Copper
Acetone		Iron
2-Butanone		Zinc
		Lendk

- for analyses run on TJA Trace ICP, ICPMS or GFAA only
- Organic blanks will be accepted if compounds detected in the blank are present in the associated samples at levels 10 times the blank level. Inorganic blanks will be accepted if elements detected in the blank are present in the associated samples at 20 times the blank level.

QUALITY CONTROL ELEMENTS OF SW-846 METHODS (Continued)

 Blanks will be accepted if the compounds/elements detected are not present in any of the associated environmental samples.

Failure to meet these Method Blank criteria requires the repreparation and reanalysis of all samples in the QC batch.

MATRIX SPIKE/MATRIX SPIKE DUPLICATE

A Matrix Spike and a Matrix Spike Duplicate are a pair of environmental samples to which known concentrations of a full or partial set of target analytes are added. The MS/MSD results are determined in the same manner as the results of the environmental sample used to prepare the MS/MSD. The analyte recoveries and the relative percent differences (RPDs) of the recoveries are calculated and used to evaluate the effect of the sample matrix on the analytical results. Due to the potential variability of the matrix of each sample, the MS/MSD results may not have an immediate bearing on any samples except the one spiked; therefore, the associated batch MS/MSD may not reflect the same compounds as the samples contained in the analytical report. When these MS/MSD results fail to meet acceptance criteria, the data is evaluated. If the LCS is within acceptance criteria, the batch is considered acceptable. The acceptance criteria do not apply to samples that are diluted for organics if the native sample amount is 4x the concentration of the spike.

For certain methods, a Matrix Spike/Sample Duplicate (MS/DU) may be included in the QC batch in place of the MS/MSD. For the parameters (i.e. pH, ignitability) where it is not possible to prepare a spiked sample, a Sample Duplicate may be included in the QC batch. However, a Sample Duplicate is less likely to provide usable precision statistics depending on the likelihood of finding concentrations below the standard reporting limit. When the Sample Duplicate result fails to meet acceptance criteria, the data is evaluated.

SURROGATE COMPOUNDS

In addition to these batch-related QC indicators, each organic environmental and QC sample is spiked with surrogate compounds. Surrogates are organic chemicals that behave similarly to the analytes of interest and that are rarely present in the environment. Surrogate recoveries are used to monitor the individual performance of a sample in the analytical system.

If surrogate recoveries are biased high in the LCS, LCSD, or the Method Blank, and the associated sample(s) are ND, the batch is acceptable. Otherwise, if the LCS, LCSD, or Method Blank surrogate(s) fail to meet recovery criteria, the entire sample batch is reprepped and reanalyzed. If the surrogate recoveries are outside criteria for environmental samples, the samples will be reprepped and reanalyzed unless there is objective evidence of matrix interference or if the sample dilution is greater than the threshold outlined in the associated method SOP.

For the GC/MS BNA methods, the surrogate criterion is that two of the three surrogates for each fraction must meet acceptance criteria. The third surrogate must have a recovery of ten percent or greater.

For the Pesticide, PCB, PAH, and Herbicide methods, the surrogate criterion is that one of two surrogate compounds must meet acceptance criteria.



STL North Canton Certifications and Approvals:

Alabama (#41170), California (#2157), Connecticut (#PH-0590), Florida (#E87225),
Illinois (#100439), Kansas (#E10336), Kentucky (#90021), Massachusetts (#M-0H048),
Maryland (#272), Minnesota (#39-999-348), Missouri (#6090), New Jersey (#74001),
New York (#10975), North Dakota (#R-156), Ohio (#6090), OhioVAP (#CL0024),
Pennsylvania (#68-340), Rhode Island (#237), South Carolina (#92007001, #92007002, #92007003),
Tennessee (#02903), West Virginia (#210), Wisconsin (#999518190), NAVY, ARMY,
USDA Soil Permit, ACIL Seal of Excellence – Participating Lab Status Award (#82)

ANALYTICAL METHODS SUMMARY

A2A250196

PARAMETER	ANALYTICAL METHOD
pH (Electrometric)	MCAWW 150.1
Acidity (Titrimetric)	MCAWW 305.1
Extractable Petroleum Hydrocarbons	SW846 8015B
Inductively Coupled Plasma (ICP) Metals	SW846 6010B
Mercury in Liquid Waste (Manual Cold-Vapor)	SW846 7470A
Specific Conductance	MCAWW 120.1
Total Cyanide	MCAWW 335.2
Total Residue as Percent Solids	MCAWW 160.3 MOD
Trace Inductively Coupled Plasma (ICP) Metals	SW846 6010B
Volatile Organics by GC/MS	SW846 8260B
Volatile Petroleum Hydrocarbons	SW846 8015 MOD

References:

MCAWW	"Methods for Chemical Analysis of Water and Wastes",
	EPA-600/4-79-020, March 1983 and subsequent revisions.
SW846	"Test Methods for Evaluating Solid Waste, Physical/Chemical
	Methods", Third Edition, November 1986 and its updates.

SAMPLE SUMMARY

A2A250196

<u>WO #</u>	SAMPLE#	CLIENT SAMPLE ID	SAMPLED DATE	SAMP TIME
ER8D3	001	SB-06 9-11	01/24/02	14:20
ER8D5	002	SB-06 11-13	01/24/02	14:40
ER8D6	003	TW-01	01/25/02	08:00
ER8EE	004	TW-04	01/25/02	08:45
ER8EF	005	TW-05	01/25/02	09:45
ER8EG	006	TRIP BLANK	01/25/02	
ER8EH	007	SB-05 9-11	01/23/02	11:00
ER8EM	800	SB-05 12-14	01/23/02	11:20

NOTE(S):

- The analytical results of the samples listed above are presented on the following pages.
- All calculations are performed before rounding to avoid round-off errors in calculated results.
- Results noted as "ND" were not detected at or above the stated limit.
- This report must not be reproduced, except in full, without the written approval of the laboratory.
- Results for the following parameters are never reported on a dry weight basis: color, corrosivity, density, flashpoint, ignitability, layers, odor, paint filter test, pH, porosity pressure, reactivity, redox potential, specific gravity, spot tests, solids, solubility, temperature, viscosity, and weight.

RMT INC

Client Sample ID: SB-06 9-11

GC/MS Volatiles

Lot-Sample #: A2A250196-001 Date Sampled: 01/24/02 14:20 Prep Date: 01/29/02 Prep Batch #: 2030125 Dilution Factor: 1.36		01/25/02	Matrix SO
% Moisture: 11	Method:	SW846 8260	B
		REPORTING	
PARAMETER	RESULT	LIMIT	UNITS
Benzene	ND	7.6	ug/kg
Ethylbenzene	ND	7.6	ug/kg
Methyl tert-butyl ether	ND	30	ug/kg
Toluene	ND	7.6	ug/kg
Xylenes (total)	ND	15	ug/kg
	PERCENT	RECOVERY	
SURROGATE	RECOVERY	LIMITS	
Dibromofluoromethane	98	(59 - 138)	
1,2-Dichloroethane-d4	95	(61 ÷ 130)	
Toluene-d8	110	(60 - 143)	
4-Bromofluorobenzene) NOTE(S):	80	(47 - 158)	

Results and reporting limits have been adjusted for dry weight.

RMT INC

Client Sample ID: SB-06 9-11

GC Volatiles

Prep Batch #: 2029169		01/25/02	Matrix SO
Dilution Factor: 1 % Moisture: 11	Method:	SW846 8015	MOD
PARAMETER TPH (as Gasoline)	RESULT ND	REPORTING LIMIT 110	UNITS ug/kg
SURROGATE Trifluorotoluene	PERCENT RECOVERY 30	RECOVERY LIMITS (10 - 150)	
NOTE(S):			

Results and reporting limits have been adjusted for dry weight.



May 8, 2015

Via Electronic Transmission and Overnight Mail

Mirtha Capiro
United States Environmental Protection Agency
Region V
77 W. Jackson Blvd. (LR-8J)
Chicago, IL 60604-3507

Subject:

Charter Steel - Cleveland Plant

4300 East 49th Street, Cuyahoga Heights, Ohio

Ms. Capiro:

In response to U.S. EPA's recent inquiry, the purpose of this letter is to provide the Agency with current information regarding the Charter Steel facility located at 4300 East 49th Street, Cuyahoga Heights, Ohio ("Site") and, more specifically, to bridge the information gap between the Preliminary Assessment/Visual Site Inspection ("PA/VSI") by U.S. EPA's contractor in 1992 and the present. Thank you for providing a copy of the December 8, 2011 report prepared by Booz Allen Hamilton on behalf of U.S. EPA, which fills in some of the gaps.

Brief History

The Site currently occupied by Charter Steel was once part of the larger United States Steel Corporation – American Steel and Wire facility ("US Steel"), which appears to have operated from approximately 1910 until 1984. Following the shutdown of the facility by US Steel in 1984, the facility was sold to a new company, American Steel and Wire Corporation, which re-started operations in 1986. Birmingham Steel Corporation purchased American Steel and Wire in 1993. Birmingham Steel Corporation filed for protection under Chapter 11 of the U.S. Bankruptcy Code in June 2002, with the majority of its assets to be purchased by Nucor Corporation in a pre-arranged deal. Charter Manufacturing Company purchased Birmingham Steel's American Steel and Wire division in March 2002. Charter Steel is an operating division of Charter Manufacturing Company. We offer this ownership overview to help explain the difficulties in pulling together historic information dating back decades and over several owners with no affiliation to Charter Steel. We continue to pull information together, but did not want to delay submission of at least some information while we do so.



Perhaps the best way to understand the changes that have occurred since the 1992 PA/VSI and Charter Steel's operations at the Site is to compare aerials. Enclosed as <u>Figure 1</u> is an aerial photograph depicting Charter Steel's present-day operations, structures and approximate property boundary. Note that Charter Steel does not own the building marked "Worthington Steel." <u>Figure 2</u> is a 1994 aerial photograph on which I have marked the approximate locations of the 10 solid waste management units ("SWMUs") identified in the 1992 PA/VSI report. <u>Figure 3</u> is the same aerial photograph that is included as Figure 1, but again I have marked the approximate locations of the 10 SWMUs identified in the 1992 PA/VSI report. Finally, <u>Figure 4</u> depicts the facility as it existed in 2002, with yellow shading to indicate the buildings that were removed by Charter Steel in 2004 and orange shading to indicate the structures constructed by American Steel and Wire in 1996 (i.e., these structures were not yet built at the time of the 1992 PA/VSI). Charter Steel constructed the new melting facility in 2005.

Current Site Operations

The Charter Steel-Cleveland Plant occupies approximately 400 total acres in a highly industrial area of southwest Cleveland, of which approximately 200 acres are covered by buildings, pavement, and other impervious surfaces. The surrounding area includes other steel producing companies, manufacturers, and light industrial businesses. The facility typically operates 24 hours per day, seven days per week.

Charter Steel-Cleveland is an integrated steelmaking manufacturing and distribution facility that produces carbon and alloy steel bar. The melting facility includes an electric arc furnace, ladle metallurgical furnace, vacuum degassing unit, billet casting facility, and wastewater treatment plant. The casting facility is a four strand caster that produces 6" x 6" billet of various lengths. The melting and casting facility was constructed where the Rod Mill, Rod Mill Storage, #1 and #2 billet yards, and Billet Conditioning & Inspection buildings were located at the time of the 1992 PA/VSI (see yellow highlighted buildings on Figure 4). The bar rolling facility was built in 1996 (see orange highlighted buildings on Figure 4). The bar mill facility consists of a reheat furnace, rolling operations, coiler operations, and a wastewater treatment plant. The wastewater treatment plants for both rolling and melting operations are closed systems that have permitted blow downs to the Northeast Ohio Regional Sewer District. The on-site Lagoon is no longer a part of the plant process recycle water system.

Charter Steel is a large quantity generator of hazardous waste, primarily emission control dust from the electric arc furnace operations (EAF dust). Melt shop operations began in June 2006, and emissions from the melt shop and associated dust handling equipment are subject to a Title V operating permit. EAF dust is shipped off-site for recycling, and is not managed on-site. Charter Steel maintains two Less-Than-90-Day storage areas. One is located at the west end of the parts warehouse (same building in which former SWMU 10 – Drum Storage Area 2 was apparently located, see below). The other is located in the building just east of former SWMU 3 (former scale pit). Periodically the plant generates waste paint from punctured aerosol cans and K061 contaminated debris.

hoses or Typec suits or things that come in contact during cleaning



Summary and Status of SWMUs Identified in 1992

SWMU 1 - Former Wastewater Treatment Lagoon / Current Stormwater Lagoon

This unit reportedly started operations in 1966 and ceased being used as part of the wastewater treatment system in 2006. The PA/VSI report recommended no further action at SWMU 1. Charter Steel cleaned out and closed the used oil tanks and piping in October 2005. The Lagoon now serves only as a stormwater retention basin, with overflow at Outfall 001 to the Cuyahoga River covered by a General Stormwater Permit. The Stormwater Lagoon is periodically dredged in order to maintain capacity, and was last dredged in 2012. Dredged sediment was characterized as nonhazardous and sent off-site for disposal.

SWMU 2 - Former Sludge Drying Beds

The PA/VSI report recommended no further action at SWMU 2. Charter Steel has never used these drying beds and is unsure of their exact location at this time.

SWMU 3 – Former Scale Pit / Current Stormwater Settling Basin

The PA/VSI report recommended no further action at SWMU 3. SWMU 3 ceased operations as a scale pit when the Rod Mill permanently shut down in 2001, prior to Charter Steel's acquisition of the property. Today, the former scale pit serves as an initial storm water settling basin that overflows to the Stormwater Lagoon (formerly SWMU 1).

SWMU 4 - Former Hazardous Waste Drum Storage Area

The PA/VSI report noted that this former hazardous waste drum storage area was undergoing RCRA closure. Subsequent documentation indicates that closure was completed during American Steel and Wire's period of ownership, by US Steel. We have not located the closure documentation, with the exception of the February 15, 1996 letter from Ohio EPA approving the final closure and noting that the facility was from that point forward a large quantity generator rather than a treatment/storage/disposal facility. Based on a review of the 1992 PA/VSI and a comparison of aerial photographs, it appears that the current Bar Mill, constructed in 1996 by American Steel and Wire, sits on top of the location of former SMWU 4.

SWMU 5 - Former Hazardous Waste Tank Farm

The PA/VSI report noted that this former hazardous waste tank farm was also undergoing RCRA closure. As with SWMU 4, subsequent documentation indicates that closure was completed by US Steel in the 1990s with Ohio EPA approval of final closure on February 15, 1996. Based on a review of the 1992



PA/VSI and a comparison of aerial photographs, the location of former SWMU 5 is completely under concrete and the area used for outdoor coil storage.

SWMU 6 - Former Dumpster Boxes

The PA/VSI recommended no further action at SWMU 6. This SWMU no longer exists and was never used by Charter Steel. As with SWMU 5, the former location of these dumpster boxes is completely under concrete and the area used for outdoor coil storage.

SWMU 7 - Former Baghouse

The PA/VSI recommended no further action at SWMU 7. This SWMU no longer exists and was never used by Charter Steel. The baghouse and related operations were all part of the building demolition that occurred in 2004 in advance of construction of the new Melt Shop and caster. The caster billet cooling bed area building was constructed on top of where this SWMU appears to have been located.

SWMU 8 - Former Hopper

The PA/VSI recommended no further action at SWMU 8. This SWMU no longer exists and was never used by Charter Steel. The hopper and related operations were all part of the building demolition that occurred in 2004 in advance of construction of the new Melt Shop and caster. The Nitrogen, Argon and Oxygen compressed gas tank farm was constructed on top of where this SWMU appears to have been located.

SWMU 9 - Former Drum Storage Area 1

The PA/VSI recommended no further action at SWMU 9. This SWMU no longer exists and was never used by Charter Steel. The area and related operations were all part of the building demolition that occurred in 2004 in advance of construction of the new Melt Shop and caster. The Meltshop wastewater treatment plant was built where this SWMU appears to have been located.

SWMU 10 - Former Drum Storage Area 2

The PA/VSI recommended no further action at SWMU 10. The storage building in which this SWMU was located is currently utilized as a parts warehouse. The exact location of the area when used for drum storage by prior owners is unclear.

U.S. EPA has indicated that the Charter Steel facility may be subject to RCRA corrective action by virtue of the two former hazardous waste units once owned and operated by U.S. Steel and/or American Steel and Wire, which at that time operated as "interim status facilities." Because both of these units were



properly closed pursuant to applicable Ohio EPA hazardous waste regulations by the previous owners, it is not clear to us that they remain "interim status facilities" such that Charter Steel – as a separate owner decades later – should be subjected to site-wide corrective action. Charter Steel has only operated as a large quantity generator. We are concerned about the potential scope of the RCRA corrective action program, based on experiences at other steelmaking facilities elsewhere, and are somewhat reluctant to launch down this path. It can be very expensive and time-consuming, even if the expected scope is to demonstrate that no remediation is needed.

Nonetheless, there may be value to both U.S. EPA and Charter Steel in moving forward cooperatively in a step-by-step and hopefully streamlined fashion while "agreeing to disagree" as to U.S. EPA's authority. A cooperative, streamlined approach would facilitate achievement of U.S. EPA's stated 2020 goal while at the same time eliminate any uncertainty as to potential corrective action obligations at our facility. Thus, we are interested in better understanding the scope of what U.S. EPA believes is needed at our facility, and the possible options for proceeding (perhaps even voluntarily rather than under a formal Order).

We are continuing to compile historic information, including any existing sampling data that may exist. Meanwhile, we would like to discuss with you next steps.

Sincerely,

Jay Lawniczak

Sr. Environmental Engineer

Charter Steel-Cleveland



May 22, 2015

Via Electronic Transmission and Overnight Mail

Mirtha Capiro
United States Environmental Protection Agency
Region V
77 W. Jackson Blvd. (LR-8J)
Chicago, IL 60604-3507

Subject:

Charter Steel - Cleveland Plant

4300 East 49th Street, Cuyahoga Heights, Ohio

Ms. Capiro:

Charter Steel is responding to your email dated May 5, 2015, in which you requested additional information pertaining to historical sampling data for the Charter Steel Cleveland site. I have attached information covering years 1986 to 2012. If you have any additional questions while reviewing this information, do not hesitate to contact me. Also, this submission is not intended to waive any previous assertion of privilege, except as to the specific documents, or excerpts of documents, provided.

Sincerely,

Jay Lawniczak

Sr. Environmental Engineer

Charter Steel- Cleveland

